IMPLICATIONS OF BUSINESS COMBINATIONS FOR ENVIRONMENTAL PROTECTION

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EXECUTIVE SUMMARY

Background

The Ontario Ministry of the Environment intends to undertake economic research to determine the achievability of pollution abatement measures in setting new standards. These economic analyses will inevitably have to consider the implications of the recent merger wave and future trends in business combinations for the economic performance of firms in Ontario and their ability to bear the costs of environmental protection.

This study addresses the trends in business combinations in Canada and internationally and their implications for environmental protection in the province, both directly, and through their impact on economic performance.

The study is based on an extensive literature review, discussions with researchers in government and the academic community, and our in-house expertise in the mergers and acquisitions field.

Trends in Mergers and Acquisitions

Although the long-term data on mergers and acquisitions (M&A) activity are less than ideal, it is clear that the 1980s represented the peak of a historically-significant merger wave in Canada and most major Western economies excluding Japan.

Canadian M&A activity in the late-1980s was particularly strong in the resource exploration and extraction industries and in the wood products (paper, furniture, lumber), printing and publishing and chemicals/materials industries.

After decreasing in the 1970s, concentration (large firm dominance) has increased modestly in individual industries in the early to mid-1980s in Canada, in part attributable to merger activity. A further increase is likely to be evident in subsequent years as data for the late-1980s become available, given the upturn in M&A levels. There has been a more sizeable increase in the share of economic activity in all industries controlled by the leading conglomerates.

Over the longer-term, industrial concentration has risen most significantly in the furniture and fixtures, transportation equipment, and electrical products industries, although only some of these changes have arisen as a result of mergers.

Factors Affecting Business Combination Trends and the Outlook to 2000

A wide range of motives underlie a firm's decision to acquire or merge with other firms. These include, among others: efforts to gain monopoly power; potential synergies in operations, research, marketing or administration; efficiencies associated with links between firms and their suppliers; tax biases for mergers; replacing poor management in the acquired company; the ability to buy undervalued, publicly-traded firms; and managerial preferences for corporate size.

Federal authorities regulate business combinations through the Competition Act and the Investment Canada Act, which address issues of industrial concentration and foreign ownership respectively. The Free Trade Agreement also affects foreign takeover rules. Provincial securities market regulations (and related federal rules) govern the takeover process for publicly-traded companies.

Financial market conditions also play a role. Deregulation, large international pools of risk capital, and the development of new financing instruments have given a boost to the M&A market in the 1980s. The decline in the junk-bond market in recent months will dampen merger prospects in the near term, particularly in the U.S.

Other developments, including increased globalization, a maturing domestic capital market, high liquidity in some major conglomerates that could be future acquirers, deregulation and the aging of heads of family-owned firms that might be divested, will all help to maintain momentum in Canadian M&A activity.

The adjustment to liberalized trade will involve an extensive restructuring in Canadian manufacturing industries, particularly in secondary manufacturing. However, this will have only a limited effect on some of the key industries regulated by the Ministry of the Environment, such as mining and smelting, steel, and pulp and paper, since they have already been largely tariff free. There may be some room for mergers to assist in restructuring in the paper industry, and in the specialty chemicals industry. The petroleum refining industry is already quite concentrated, and further mergers are unlikely, although there could be ownership changes. The resource industries, including pulp and paper and mining and smelting, will remain attractive to foreign buyers seeking to add to their raw material reserves.

Economic Implications of Business Combinations

According to studies of stock market performance, firms involved in mergers or takeovers appear to generate economic gains due to superior management or operations efficiencies following the business combination. The direct evidence based on observations of firm performance is more mixed. Many studies suggest that larger firm and plant sizes would result in economies of scale and superior economic performance in Canada. On balance, while the issue remains controversial, the evidence appears to suggest that M&A activity will be of net benefit to the longer-term performance of firms in Canada.

In the near-term, the recent wave of debt-financed takeovers appears to have weakened the financial structure and increased the risk of bankruptcies in North American industries, although this effect has been stronger in the U.S. than in Canada.

There is some evidence that mergers can increase the degree of monopoly power in Canadian industries, which implies greater profits but also the potential for higher consumer prices where strong scale economies are lacking. The Competition Act is constraining mergers in markets that are already highly concentrated. Moderate industrial concentration (the degree dominance of large firms) has some benefits for R&D spending.

Business Combinations and Environmental Protection

On balance, our study suggests that business combinations will have a positive long-run impact on environmental protection in Ontario. In the short-term, heavily debt-financed combinations may make it more difficult for firms to finance capital costs associated with environmental protection activities.

In the U.S., empirical studies demonstrate that implementation of an approach that considers economic achievability in regulatory policies results in weaker *enforcement* of standards for economically troubled firms and industries. The evidence is more mixed on the linkage between economic performance and the *setting* of standards. Ontario has indicated its intention to consider economic impacts in setting revised water and air quality standards. A U.S. study also suggests that more profitable firms are more likely to *comply* with air and water quality regulations.

In the long-run, the current merger wave, and the future mergers that will form a part of the adjustment to liberalized trade, are expected to improve the efficiency of

Ontario industries. To the extent that this in turn leads to an overall growth in economic activity in the province, overall emissions levels would increase at any given standard for emissions relative to output. However, the efficiency gains resulting from mergers should improve the ability of Ontario industries to remain competitive in the face of environmental protection costs, and therefore reduce the need to compromise on standards to minimize economic costs.

In the near-term, the high debt loads taken on by many firms active in the M&A market will make it more difficult for these firms to raise additional capital for environmental protection purposes, and could increase the degree to which bankruptcy risks will play a factor in standards setting. There is no direct evidence that firms cut back on environmental protection spending in the wake of a merger. However, evidence that firms do cut back on research and development spending might also be applicable to environmental spending that is of a similar, discretionary nature.

This study provides an example from a recent large Canadian merger, which indicates the typical changes in financial ratios associated with debt-financed acquisitions, for the types of financial indicators used by the U.S. EPA to assess the impacts of environmental protection costs. The case study indicates that financial ratio analysis can be misleading in the case of firms active in the mergers and acquisitions market, due to the impact of takeovers on the book values of assets. It also shows how debt financed acquisitions reduce the short-term financial flexibility of firms. Based on this case study, we offer some technical suggestions concerning the appropriate choice of indicators for subsidiary corporations or firms active in M&A transactions.

The Ministry might wish to include in its economic achievability studies an assessment of the potential for a previously debt-laden firm to remain in operation in the wake of a bankruptcy, thereby reducing the impacts on employment. This is particularly the case for U.S.-based firms that can avail themselves of the protection afforded under Chapter 11.

U.S. studies do not provide support for the hypothesis that business combinations that lead to large firms or concentrated industries increase the political power of such firms or industries in terms of their ability to avoid stringent environmental protection standards or enforcement. These same studies in fact suggest that small or single-plant firms, due to their greater financial vulnerability, obtain less strict regulatory

treatment. Another study found no linkage between firm sizes and the degree of compliance.

Business combinations will make it more difficult to use corporate financial data to reach clear conclusions on the financial and economic viability of individual plants. A vertically-integrated firm may keep one level of production active despite poor returns if arm's length supplies for profitable downstream operations are unavailable. A firm with several plants in different jurisdictions might choose to shut down a plant that is profitable on its own if excess capacity exists in other facilities.

Studies and regulators' experience suggest that there are often economies of scale in environmental protection activities. The merger of two firms, particularly where the output is then concentrated in a smaller number of plants, will therefore result in lower costs of compliance with the Ministry's standards. Mergers may also result in the shut-down of older, less efficient plants that may also tend to be those where environmental performance has been the weakest.

Future research could be directed at developing data on environmental protection expenditures, enforcement and compliance in Ontario that could be used to check for the applicability of conclusions reached in U.S. studies. There is also the need for the development of a thoughtful approach to assessing the economic impacts of environmental costs on multi-plant or diversified enterprises.

1. INTRODUCTION

1.1 Background and Purpose

The Ontario Ministry of the Environment is currently in the process of setting new regulations for the control of both water and air emissions, under MISA and Regulation 308 respectively. The approach taken in developing these regulations includes conducting economic impact assessments of regulatory alternatives, and the determination of the economic achievability of pollution abatement measures.

These economic analyses will inevitably have to consider the implications of recent and future changes in industrial market structures for the economic performance of firms in Ontario and the ability of the province to regulate their environmental performance.

An industry's structure (including the number and size of firms, the number of customers, degree of vertical integration, and other aspects of the competitive environment) can be significantly altered by acquisitions, mergers, consolidations and divestitures. At the same time, it may also be influenced by the formation of new businesses, exits by existing businesses and other factors.

Business combinations can act to increase either industrial concentration (the extent to which sales in a given product market are dominated by the top few firms) or corporate concentration (the extent to which the largest businesses in all industries are held under common ownership by major conglomerates), as well as affecting the degree of vertical integration (linkages between a firm and its suppliers). These elements of market structure in turn affect the competitiveness and profitability of Canadian and Ontario industries.

The financial health of Ontario industry is an important consideration in the environmental protection regulatory process (which itself influences economic performance through its impacts on entry and exits by business), and also directly affects the environment through the linkage between industry activity (output) and emissions.

In order to evaluate the potential impacts of business combinations on environmental protection issues, the Ministry of the Environment commissioned an Ernst &Young study of the trends in business combinations in Canadian industry, and the theoretical and empirically-demonstrated impacts such combinations have on factors that affect the environment.

1.2 Methodology

Three approaches were taken to develop the material contained in this report. First, we conducted an extensive review of the literature on both business combinations and on the linkages between combinations and environmental protection activity. In the case of the latter, since the topic is a very specialized one pursued by only a small number of researchers, direct contacts with leading participants in the field of environmental and regulatory economics were used to guide us to the available literature.

Second, we checked on the availability of data and reports from the Ontario government, the federal government and the U.S. EPA. We also discussed with the EPA the relationships between firm sizes, leverage and other factors affected by business combinations and environmental protection policies. EPA officials were of particular interest to our study team in this context, since the concepts chosen for economic impact assessments under new Ontario regulations are based on those already in place in the United States.

Third, we relied on our own in-house expertise on the mergers and acquisitions market, and in some cases developed hypotheses for future testing based on our own experience with Ontario industries.

1.3 Report Organization

In addition to the Executive Overview, this report comprises five Chapters, including this Introduction. Chapter 2 reviews the recent trends in Canadian mergers and acquisitions activity, and the extent to which these trends have historically had an influence on industrial concentration.

Chapter 3 examines the factors that affect business decisions related to acquisitions and divestitures, and based on projections for these factors, develops an assessment of the prospects for M&A activity in Canada to the year 2000.

In Chapter 4, we review the extensive literature on the impact of mergers, and the changes in industrial and corporate concentration arising from M&A activity, on the economy, including impacts on monopoly power, economies of scale, the business cycle, income distribution and other economic indicators.

Chapter 5 develops hypotheses that relate the economic implications of mergers to the environmental performance of Canadian and Ontario industries, and the ability of regulators to set tougher standards while remaining within the bounds set by economic achievability. To the extent that evidence is available linking environmental performance and regulatory policies with mergers and corporate concentration, it is reviewed in this Chapter. A case study of a recent merger is used to illustrate some of the typical economic and accounting implications of mergers, and their relevance for assessments of the economic impacts of environmental protection costs. We also offer suggestions for further research that could be undertaken to test some of the hypotheses developed in this study.

Appendixes provide details on federal and provincial regulations affecting mergers, tax implications of mergers and the merger trends in other countries. A glossery of financial and economic terms is also provided.

2. TRENDS IN BUSINESS COMBINATIONS

2.1 Canadian Trends in Mergers and Acquisitions

2.1.1 Overall M&A Activity Levels

In order to assess the magnitude of potential impacts of business combinations on environmental protection in Ontario, it is necessary to understand the degree to which recent mergers and acquisitions and the outlook for further combinations represent a significant change in industrial structure in the province.

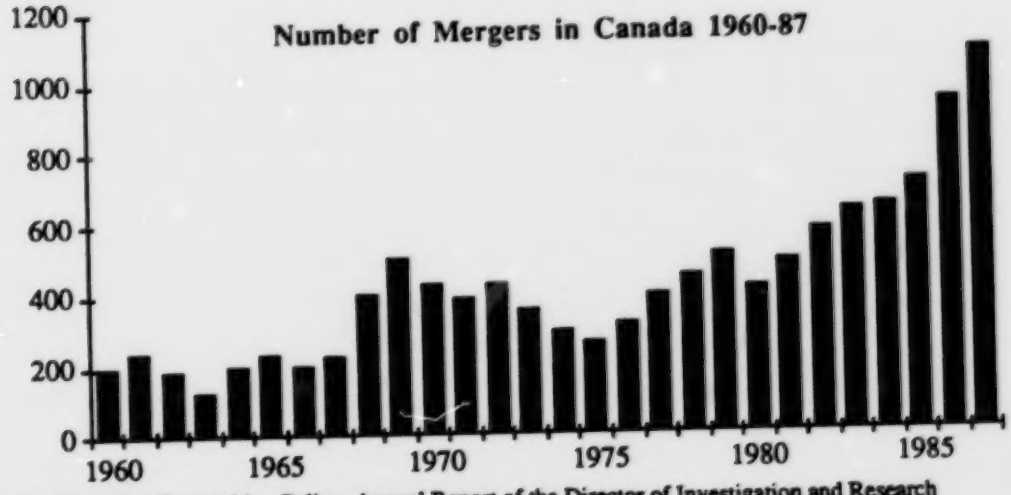
Unfortunately, there is a paucity of data on the historical trends in merger and acquisition activity in Canada. The longest time series is that collected by the Department of Consumer and Corporate Affairs for its merger record, which is published in the Annual Report of the Director of Investigation and Research. This series, however, is a mere head-count of the number of mergers, and is thought by researchers at the Department to be only a very rough indicator of the true extent of merger activity in Canada. Statistics Canada does not maintain a data series on M&A activity. The data published by Venture Economics in *Mergers and Acquisitions in Canada*, while thought to be fairly comprehensive, only dates from 1985, and therefore does not provide an extended basis for comparison against current transactions levels.

Despite this lack of data, it is clear by any measure that Canada is in the midst of a significant merger boom, involving the transfer of control over billions of dollars in assets annually. *Mergers and Acquisitions in Canada* recorded 1,301 transactions in 1988 in Canada worth a total of $20.2 billion. While this represented a decrease from the torrid pace in 1987, the first two quarters' results for 1989 have shown a strong rebound, with the transaction value at just over $20 billion, or 31% above the level in the same period in 1988, and well on its way to surpassing the $27.8 billion record set in 1987. A similar process is underway in the United States, where close to $250 billion in transactions were recorded in 1988.

Both in Canada and in the U.S., the data suggest that this merger wave is a sizeable one relative to previous experience, but the dollar values and numbers of transactions tend to paint an overly dramatic picture in terms of the importance of the merger boom to the economy as a whole. An examination of U.S. merger trends since the 1800s indicates that relative to the size of the economy, previous merger waves appear to have been larger than the current one.

In Canada, the somewhat incomplete merger record assembled by Consumer and Corporate Affairs for 1960-87[1] (see Figure 2.1 below), and a study by Globerman[2] that examined merger trends over 1945-74, suggest that in terms of the number of mergers the current boom is unprecedented in Canadian post-war experience. However, this should also be interpreted with caution, since the four-fold rise in the number of mergers during the 1945-74 period actually represented a decrease in merger activity expressed as a share of the number of active companies in Canada at the time.

Figure 2.1



Source: Bureau of Competition Policy, Annual Report of the Director of Investigation and Research

A longer time-series reveals that there have been other merger waves of similar magnitude (relative to the size of the economy at the time) earlier in this century. Data reported by Green[3] show that merger waves occurred in 1909-12, the late 1920s with a peak in 1928-29, in addition to the present merger wave and the one that peaked in 1969.

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[1]Published in the Annual Report of the Director of Investigation and Research, Department of Consumer and Corporate Affairs. This data source is based on mergers covered in press accounts, and is thought by the Department to be indicative of overall trends while underestimating the actual merger count in each year, particularly for small mergers.

[2] Globerman, Stephen, *Mergers and Acquisitions in Canada.* Royal Commission on Corporate Concentration Study # 34, (Supply and Services Canada; Ottawa; 1978)

[3]Green, Christopher, Canadian Industrial Organization and Policy, (McGraw Hill Ryerson; Toronto; 1985).

All of these merger waves have been associated with booms in the stock market, with rising optimism about corporate prospects held by both shareholders and other firms considering potential takeover targets.

To some extent, takeover activity also helps to sustain stock market advances, particularly since acquiring firms typically pay a premium above previous trading values in takeovers of publicly traded companies. The anticipation of takeovers can bid up the share prices of companies that are not actually subject to a formal bid. There is also a view, which we discuss below, that takeover activity provides an incentive for the management of potential target companies to run their companies effectively in order to keep share values and thus takeover costs high.

Table 2.1
Share of Mergers by Type 1920-86

	Horizontal	Vertical	Conglomerate	Other
1920-24	74%	12%	4%	11%
1930-39	69	6	5	19
1940-48	57	18	8	16
1945-61	40	23	9	28
1972-74	69	11	20	N.A.
1975-77	59	11	30	N.A.
1980-82	58	N.A.	N.A.	42
1983-86	49	N.A.	N.A.	N.A.

Sources: Green, Christopher, *Canadian Industrial Organization and Policy*, (McGraw-Hill Ryerson; Toronto; 1985) for data to 1982; *and* Marfels, Christian, "Aggregate Concentration in International Perspective" in *Mergers, Corporate Concentration and Power in Canada* (IRPP; Halifax; 1988) for 1983-86. Green's data are drawn from a number of separate studies.

The merger record data has also been examined in special tabulations for the breakdown of mergers by type. Horizontal mergers, those between firms in the same

industry, have consistently accounted for the greatest share of the total. Vertical mergers, those between firms and their suppliers, appeared to be quite prevalent in the immediate post-war period, while conglomerate mergers between unrelated businesses were a feature of the merger wave that preceded the present one. (See Table 2.1 on page 11.)

2.1.2 Trends in Industry and Corporate Concentration

Despite the attention that mergers and other business combinations have garnered in the financial press, the linkage between merger activity and industrial concentration (the share of activity held by the leading firms in a given industry) is an inconsistent one. Mergers did have a measurable impact on industrial concentration in the early post-war period. (See Table 2.2 on the next page.) Industrial concentration was stable or declining during the 1970s[1] despite the merger activity in the early part of that decade, perhaps because many of the large mergers involved actions by diversified conglomerates. There has been a notable increase in average concentration levels since 1980, connected in part with merger activity.

There are a number of reasons why mergers have not had an even more marked effect on the various measures of concentration in individual industries. First, business combinations can actually decrease some measures of industrial concentration that reflect the degree of size inequality among firms in an industry (such as the Gini Coefficient).

Second, takeovers involving firms outside the industry of the acquired firm (conglomerate mergers) can act to increase competition in the industry. Caves et al[2] found that firms often use acquisitions as a means of entering an industry that would otherwise be protected against the entry of a new firm as a result of brand loyalties, unique resources, and other entry barriers. The new owners may be able to expand the market role of the acquired firm, and thereby reduce the market share of larger firms in the industry. As is evident in the data in Table 2.1, conglomerate mergers were particularly important in the previous merger wave.

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[1]As documented in Khemani, S., *The Extent and Evolution of Competition in the Canadian Economy*, in D.G. McFetridge, ed., *Canadian Industry in Transition*, (University of Toronto Press: Toronto: 1986)

[2]Caves, R.E., M. Spence, M. Porter and R. Scott, *Competition in the Open Economy*, (Harvard University Press; Cambridge, Mass; 1980)

Table 2.2
Average Levels of Industrial Concentration in Manufacturing 1948-1986

	Weighted Average 4 firm Concentration Ratio (weights based on employment)	Weighted Average 4 firm Concentration Ratio (weights based on shipments)
1948	44.3	N.A.
1954	48.6	N.A.
1965	53.9	N.A.
1970	52.9	48.8
1976	N.A.	47.6
1980	N.A.	46.0
1986	N.A.	53.1

Sources: Green, Christopher, *Canadian Industrial Organization and Policy*, (McGraw-Hill Ryerson; Toronto; 1985) for data to 1982 and Statistics Canada.

Third, most mergers are small ones, that do not involve a major change in market shares. Of 997 acquisitions in the manufacturing sector reviewed by the Economic Council of Canada, only 8% might have raised any competition concerns at all (although these tended to be the larger ones, which accounted for about 1/3 of the total assets acquired).

More evident than the effect on market shares in individual industries has been the impact on aggregate or corporate concentration, the share of total industrial activity held under the control of the largest few enterprises. The largest 25 enterprises already accounted for 23.8% of non-financial sector assets in 1965, and this grew to 35.3% by 1984. Khemani[1] notes that the most dramatic increases in measures of corporate concentration coincided with the merger waves in 1968-75 and in 1980s.

Note that the composition of the top 25 enterprises will have changed over time, so these data do not necessarily track the growth of each of the firms that had been in

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[1]Khemani, R.S., "The Dimensions of Corporate Concentration in Canada", in *Mergers, Corporate Concentration and Power in Canada*, R.S. Khemani, D.M. Shapiro and W.T. Stanbury, editors. (Institute for Research on Public Policy; Halifax; 1988.

the top 25 in 1965. A special tabulation conducted for R.S. Khemani[1] recorded the share of corporate assets accounted for by 15 major conglomerates.[2] As shown in Table 2.3 below, recent years have seen a marked increase in the assets under these firms' ownership, and by 1985 mergers among them left only 12 corporate groups involved.

Table 2.3
Asset Share of Selected Economy-Wide Conglomerates

	1977	1980	1983	1985
Total Conglomerate Assets ($ Billions)	$37	$74	$135	$211
Conglomerate Assets as a % of Total Corporate Sector Assets (incl. financial sector)	6.8%	8.8%	11.9%	16.0%

Source: Khemani, R.S., "The Dimensions of Corporate Concentration in Canada", op cit.

Marfels[3] undertook a comparison of international trends in the share of national assets held by the top 100 companies in Canada, Japan, the U.S. and West Germany. Although the data sources are not strictly comparable, it appears that Canadian corporate concentration is higher than that of the other countries examined, and Canadian corporate concentration was rising rapidly over 1965-83 while concentration fell in each of the other countries.

R.S. Khemani[4] notes that the vast majority (85%) of large U.S. companies are widely held, while only 22% of Canadian companies are widely held. Most of the large

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[1]Ibid.

[2]Comprising Belzberg/First City, Black/Revelston, CP, Edper/Brascan, Hiram Walker, Nova/Husky, Southern/Atco, Weston/Loblaws, BCE, Cemp/Seagrams, Desmarais/Power, Genstar, Imasco, Reichman/Olympia & York, and Thomson/Hudson's Bay.

[3]Marfels, Christian, "Aggregate Concentration in International Perspective" in *Mergers, Corporate Concentration and Power in Canada* (IRPP; Halifax; 1988)

[4]Khemani, R.S., "The Dimensions of Corporate Concentration in Canada", op cit.

companies listed on the TSE 300 Composite Index are either majority-owned (48% of the companies) or effectively controlled by a substantial minority interest (30% of the companies).

2.1.3 Mergers and Concentration by Industry

Mergers and Acquisitions in Canada provides data on the mix of M&A activity by industry, with the detailed industry breakdown of the acquired companies available for 1987 and 1988. Tables 2.4 and 2.5 on the following pages provide a comparison of the recorded number and value of assets acquired in each sector relative to the total number of firms and assets in these industries.

As the table demonstrates, the recent activity has been disproportionately concentrated in the resource exploration and extraction industries and in the wood products (paper, furniture, lumber), printing and publishing and chemicals/materials industries.

As we noted above, the longer-term historical data on M&A activity in Canada are suspect, and record only the number of mergers and their approximate allocation by industry. It is therefore difficult to draw clear conclusions based on these data on the longer term M&A trends based on the merger data themselves.

An indirect approach to identifying longer-term trends is available through an examination of the trends in concentration in each industrial sector, since horizontal mergers tend to increase measured concentration in most cases. Increased industrial concentration is one of the most important potential structural changes that can arise as a result of business combinations, although one should recognize that internal growth by large companies or exits of their rivals can increase concentration in the absence of any merger activity.

As shown in Table 2.6, industrial concentration has risen most significantly in the furniture and fixtures, transportation equipment, and electrical products industries. In the case of transportation equipment, the entry of new transplant operations is likely to have diminished measured concentration in this sector since 1985.

Also indicative of the operation of mergers and acquisitions are data on the share of activity in each industrial sector accounted for by the operations of Canada's largest enterprises. As shown in Table 2.7 on the next page, the leading enterprises

Table 2.4

NUMBER OF M&A's BY INDUSTRY AS A PERCENT OF FIRMS IN INDUSTRY

Industry	No. of Firms 1986	1985 Number of M&A	1985 % of Total	1986 Number of M&A	1986 % of Total	1987 Number of M&A	1987 % of Total	1988 Number of M&A	1988 % of Total
Agr., Forestry, Fishing	23,922	9	0.04%	9	0.04%	14	0.06%	16	0.07%
Mining	5,519	59	1.07%	64	1.16%	93	1.69%	179	3.24%
Oil & Gas	2,522	105	4.16%	53	2.10%	84	3.33%	96	3.81%
Total Resource Industry	31,963	173		126		191		291	
Construction	62,191	9	0.01%	7	0.01%	n/a	n/a	n/a	n/a
Food Products Mfct.	4,372	38	0.87%	52	1.19%	55	1.26%	43	0.98%
Textile & Clothing	4,339	27	0.62%	32	0.74%	32	0.74%	12	0.28%
Pulp & Paper, Lumber, Furn.	6,887	38	0.55%	29	0.42%	60	0.87%	43	0.62%
Printing & Publishing	715	35	4.90%	25	3.50%	30	4.20%	49	6.85%
Chemical & Materials	9,875	103	1.04%	128	1.30%	161	1.63%	126	1.28%
Machinery & Electrical Equip	3,277	96	2.93%	130	3.97%	100	3.05%	89	2.72%
Transportation Equipment	1,653	73	4.42%	67	4.05%	95	5.75%	59	3.57%
Total Manufacturing	93,309	419		470		533		421	
Trans, Comm, & Util.	26,445	90	0.34%	99	0.37%	80	0.30%	81	0.31%
Wholesale	51,872	40	0.08%	137	0.26%	172	0.33%	120	0.23%
Retail	88,747	71	0.08%	70	0.08%	78	0.09%	60	0.07%
Financial	148,003	107	0.07%	111	0.07%	123	0.08%	144	0.10%
Business, Personal, & Other	128,925	137	0.11%	181	0.14%	186	0.14%	184	0.14%
Total Services	443,992	445		598		639		589	
TOTALS	569,264	1,037		1,194		1,363		1,301	

Table 2.5

VALUE OF M&A's BY INDUSTRY AS A PERCENT OF TOTAL INDUSTRY VALUE

Industry	Value of Assets ($millions)	1987 Value of M&A	1987 % of Assets	1988 Value of M&A	1988 % of Assets
Agr., Forestry, Fishing	13,438	300	2.23%	200	1.49%
Mining	43,988	1500	3.41%	3000	6.82%
Oil & Gas	69,755	9200	13.19%	4500	6.45%
Total Resource Industry	127,181	11,000		7,700	
Construction	24,679				
Food Products Mfct.	28,855	2400	8.32%	310	1.07%
Textile & Clothing	7,997	120	1.50%	37	0.46%
Pulp & Paper, Lumber, Furn.	36,873	2200	5.97%	2200	5.97%
Printing & Publishing	3,146	180	5.72%	312	9.92%
Chemical & Materials	91,985	1300	1.41%	4300	4.67%
Machinery & Electrical Equip	20,239	380	1.88%	427	2.11%
Transportation Equipment	23,588	620	2.63%	314	1.33%
Total Manufacturing	237,361	7,200		7,900	
Trans, Comm, & Util.	189,606	1700	0.90%	4000	2.11%
Wholesale	71,799	480	0.67%	312	0.43%
Retail	54,503	750	1.38%	352	0.65%
Financial	957,796	6,300	0.66%	2,800	0.29%
Business, Personal, & Other	56,260	1670	2.97%	736	1.31%
Total Services	1,329,965	10,900		8,200	
TOTALS	1,694,506	29,100		23,800	

Table 2.6

AVERAGE TOP 4 ENTERPRISE CONCENTRATION RATIOS BY INDUSTRY*

Industry	1985	1984	1980	1976	1972
Forestry	23.9	25.0	21.4	23.5	17.1
Mining	75.4	74.9	79.3	77.9	x
Food & Beverages	x	x	x	51.8	x
Food	49.1	49.6	x	x	x
Beverages	79.9	80.4	x	x	x
Tobacco Products	x	x	x	99.5	x
Rubber Products	60.9	x	x	x	x
Plastic Products	22.8	24.0	x	x	x
Rubber & Plastic Prod.	x	x	33.3	36.3	40.3
Leather & Allied Prod.	x	33.4	x	35.1	33.7
Primary Textiles	62.7	63.6	59.3	58.9	61.4
Textile Products	44.0	x	x	x	x
Clothing	24.6	26.1	x	x	14.4
Wood	x	x	x	25.8	25.4
Furniture & Fixtures	27.0	x	x	19.7	18.1
Paper & Allied Prod.	50.6	x	33.3	x	x
Printing, Pub., & Allied Ind.	40.1	40.6	35.0	34.3	29.9
Primary Metal Industries	x	x	73.1	75.6	75.3
Fabricated Metal Prod. Ind.	38.1	39.6	x	31.7	30.8
Machinery	x	x	25.5	x	28.5
Transportation Equip.	77.8	77.7	x	68.5	69.2
Electrical & Elect. Products	66.1	67.2	x	59.2	58.2
Non-metalllic Mineral Prod.	67.0	67.2	64.0	65.5	65.5
Refined Petroleum & Coal Prod.	64.0	68.5	61.7	67.7	73.6
Chemical & Chemical Products	x	44.5	x	45.6	x
Other Manufacturing	38.7	39.0	46.3	46.9	45.0
Total Manufacturing	53.1	54.0	46.0	47.6	48.3

* Concentration is measured by the leading four enterprises' share of industry shipments, weighted by value added of each industry.

dominate in the utilities, mining and manufacturing sectors, and have increased their role in each of these sectors over 1975-83.

Table 2.7
Share of Total Sectoral Corporate Assets in Canada Held by the 100 Largest Non-Financial Enterprises 1975 and 1983

Division	Top 100 Share (%) 1975	1983
Agriculture/Forestry/Fishing	n.a.	4.7
Mining	51.2	59.7
Manufacturing	47.0	50.9
Construction	3.4	2.5[1]
Transportation/Commun./Utilities	75.6	82.2
Trade	26.5	30.6
Finance	17.3	18.3
Services	9.6	12.1

Source: Marfels, C. op cit., based on special run of CALURA data, Statistics Canada.

2.2 Experience in Other Countries

The merger wave in Canada closely parallels the experience of other industrialized countries, particularly the United States. U.S. mergers often precipitate the merger of subsidiary firms in Canada. In addition, many of the market forces underlying the merger wave in Canada have been similarly present in other countries, including a growing global financial services sector, increased international business competition, and a sell-off of divisions accumulated during the conglomerate merger wave of the late 1960s and early 1970s. A review of the experience in the U.S., the U.K., and Japan is provided in Appendix 1.

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[1]Excluding government enterprises.

3. FACTORS AFFECTING BUSINESS COMBINATIONS IN CANADA AND THE MERGER OUTLOOK TO 2000

3.1 Introduction

In order to understand the implications of the recent merger wave for environmental protection, and anticipate future M&A developments, it is important to understand the factors that lie behind the mergers and acquisitions process. These include the motivations of businesses undertaking M&A transactions, as well as the economic and regulatory forces shaping the current trends. Based our assessment of future developments relating to these underlying factors, we develop an outlook for business combinations in Canada in the coming decade.

3.2 Motivations for Business Combinations and Divestitures

A wide range of factors are thought to underlie firms' decisions to merge or acquire other businesses, or divest themselves of existing operations. Some of the motives may relate to real economic gains that can be achieved by combining or separating the operation of individual business units. In other cases, the motives may range from managerial preferences for large or diversified firms, tax avoidance, accounting anomalies that enable mergers to generate improved performance "on paper", monopolization, and other factors that need not correspond to economically efficient decision making.

In this section, we review many of the major motivations that lead companies to acquire others. In most cases, there are parallel motives for divestitures.[1] The evidence on the corresponding economic impacts that might be attributed to mergers motivated by each of these factors is discussed in Chapter 4.

3.2.1 Mergers as an Attempt to Gain Monopoly Power

Particularly evident in the case of the merger boom in the U.S. in the late 1800s, mergers may be motivated by a desire to reduce the degree of competition in a market and enable firms earn monopoly profits. The most direct impact in this direction arises in the case of horizontal mergers – those between two competitors in the same

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[1]This section draws upon an extensive body of theoretical and empirical research into the motivations for merger decisions. Individual references for the numerous original sources are available in the reviews of this literature provided by Peter Steiner, in *Mergers: Motives, Effects, Policies*, by Roger Clark in *Industrial Economics*, and by F.M. Scherer in *Industrial Market Structure and Economic Performance (2nd Edition.)*.

market. Such mergers are, however, the most obvious targets for regulation under combines legislation, and, as we discuss below, are currently being subjected to close scrutiny under the Canadian Competition Act.

Other forms of mergers may indirectly lead to a reduction in competition. A vertical merger – one between a firm and its supplier or customer – may be used in a number of ways to expand a firm's monopoly power. For example, by acquiring all of the distributors of a product, a firm may force a new entrant to invest in its own distribution system, which may make it more difficult to finance such an entry.

A firm with a monopoly in one stage of production (e.g. pencil lead) cannot extend its monopoly profits by acquiring all of the firms in a downstream industry (pencils) if its product must be used in a fixed proportion of the downstream industries' products.[1] However, where there are substitutes in the downstream industry, the upstream firm can increase its monopoly power through vertical mergers, since it will find that in the absence of vertical integration, a reduced proportion of its product will be used in downstream production as it raises its price. However, this forward integration may have offsetting improvements in economic efficiency by avoiding the distortion in the technology used to produce the downstream product that would otherwise result from monopoly pricing upstream.

3.2.2 Synergistic Mergers

A merger can increase the value of the acquired firm if their are synergies between its operations and those of the acquiring firm. Such synergies can arise in a number of ways:

1. The firms may be able to achieve scale economies in production, by rationalizing the production assets of the two companies and increasing the utilization of the remaining facilities.

2. One of the firms may have a brand name, production technology, management team, distribution network or other asset that can be applied to the operations of the other firm. This is frequently a factor in international takeovers by multinational corporations, which are able to apply their R&D results, recognized brand names and other assets in the country of the acquired firm. A firm with a particularly effective

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[1]This is demonstrated by Vernon, J.M. and D.A. Graham, in "Profitability of Monopolization by Vertical Integration", *Journal of Political Economy*, Volume 79 (1971).

technology for environmental protection might have an asset that it could apply to the operations of an acquired firm.

3. Vertically related firms may merge to improve scheduling of inputs for the downstream firm, ensure access to supplies for the downstream firm in the event of shortages, or to eliminate transactions and contracting costs between arms' length suppliers. The latter motive is particularly important where the input must be customized, so that there would not be a market for the upstream firm's products in the event that the downstream firm refuses to buy them.

4. Vertically-related firms may find it in their interest to merge where the two levels of the market are non-perfectly competitive. While the theory is quite complex, such mergers can increase monopoly profits but can have either a positive or negative effect on economic welfare overall.

5. The new larger firm may be able to achieve scale economies in purchasing common inputs, in arranging financing, and other non-production costs. Environmental protection costs may themselves be a source of scale economies.

6. Conglomerates may be able to use their political influence to gain regulatory or other policies favourable to the operation of their subsidiaries.

3.2.3 Tax-Induced Mergers

Since the Income Tax Act taxes each corporation as a separate entity, mergers and acquisitions may affect the overall tax liability of a group of corporations. The implications of the tax system on Ontario's corporate structure were recently reviewed in a report by Ernst & Young (formerly Woods Gordon) for the Ontario Ministry of Industry, Trade and Technology.

This report concluded that a wide range of measures in the post-reform tax system may affect a corporation's decision to merge with or acquire another firm. Recent changes have generally had the effect of reducing the incentives to merge, particular in the case of mergers among firms in different lines of business. These measures are reviewed briefly in Appendix 2.

For firms in the same line of business, the Income Tax Act can permit a firm to apply the accumulated tax losses of an acquired firm against the acquiring firm's taxable income. Since these tax losses would otherwise be deferred or go unused, they represent an incentive for horizontal mergers linking a profitable firm with a firm that is not in a tax-paying position.

Since environmental protection costs may in some cases be treated as operating expenses, they represent potential sources of costs that can be deducted from overall corporate income for tax purposes. Thus, environmental protection costs could be a source of tax losses that can be a motive for horizontal mergers as discussed above.

3.2.4 Mergers and the Market for Corporate Control

The management of an acquired company is often altered in the wake of an M&A transaction, which may include a restructuring of management responsibilities, or a replacement of key personnel. These changes in management and control are often key motivations for mergers, acquisitions and divestitures, in what has come to be termed "the market for corporate control".

Section 3.1 already dealt with the case where a real economic gain can be realized by using excess managerial capacity in one company in the operations of a second firm. More generally, the replacement of a poor or less-than-optimizing management by a team that can generate the full potential value on the assets of the acquired company can generate real economic gains that can justify the costs of a takeover.

An entrenched management might fail to profit-maximize for a variety of reasons, including excessive spending on managerial perquisites, an undue reluctance to accept business risks[1], a desire to merely earn satisfactory returns and avoid the effort involved in making changes, or as a result of poor business judgement. For this reason, most economists and finance theorists now view the M&A process as an important check on non-profit-maximizing behavior by the management of widely-held companies. In such firms, shareholders, directors and the incentives provided in the manager's compensation package may be only a weak disciplinary force.[2]

Poor performance by the existing management will reduce the trading price of the company's shares, and thereby lower the cost to an acquirer of purchasing the assets through a takeover bid. After a leveraged buy-out, the management of the resulting highly

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[1]Management may feel that they will be blamed in the event of a failure of a project that had strong potential returns, while only partially sharing in the upside gains from a successful project.

[2]One of the leading proponents of this view is Michael Jensen. See, for example, his articles "Takeovers: Folklore and Science", *Harvard Business Review*, November/December 1984 and "Takeovers: Their Causes and Consequences", *Journal of Economic Perspectives*, Winter 1988.

leveraged, privatized firms has little scope for non-profit maximizing behavior (due to the need to meet interest obligations) and a more direct financial stake in the performance of the firm.

Other, more critical observers of the M&A process believe that non-optimizing behavior by the management of acquiring companies is a more important factor. The acquiring firm's management may pursue acquisitions that lack any economic benefits or potential for gains to the acquiring company, due to preferences for managing larger companies, a belief that compensation and opportunities for advancement will increase with the size of the company, fads in corporate strategy, or to take advantage of accounting conventions that can sometimes improve the performance of the company on paper without any actual economic gains. We review the evidence on these competing theories in Chapter 4.

In any event, there is likely to be less scope for the "market for corporate control" in Canada than in the United States, since, as we have noted, the shares of most of the large companies in Canada are closely-held. Since the large shareholder has effective control of the firm and can replace internal management that does not maximize returns, there is less need for the disciplinary force of the market for corporate control in Canada.

3.2.5 Other Motivations for Business Combinations

The various factors above are those most frequently cited as managerial motives for undertaking mergers and acquisitions activities. However, a host of other explanations have been offered as explanations of the current and previous merger waves.

Takeovers of publicly-traded companies could be triggered by inefficiencies in the equity market that cause firms to be undervalued by the market. Such an undervaluation could occur due to incomplete information on the company's assets, or speculative swings in stock prices away from values based on the underlying stream of earnings.[1]

Mergers can be used to redistribute wealth from bondholders to shareholders, by increasing the bankruptcy risk borne by the former. This can be

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[1]Such misvaluations were first demonstrated in Shiller, Robert J. "Do Stock Prices Move Too Much to Be Justified by Subsequent Changes in Dividends?" *American Economic Review*, 1981.

accomplished if the acquirer uses cash to buy a firm with a riskier expected cash flow (since the shareholders will earn all of the upside revenues if the cash flows are strong but bondholders bear much of the added downside risk) or if the takeover reduces the seniority of the claims held by the target company's bondholders.

Some have argued[1] that the gains to shareholders from acquisitions have been financed by losses to labour, as the new owners use the pressure of high debt financing and the resulting bankruptcy risks to force wage concessions. Some of the major airline and steel industry mergers in the U.S. appear to have been prompted by the need for renewed negotiations with labour.

Since the merger process generates large fees for investment dealers and legal advisors, there is a view, expressed by Kenneth Davidson[2] and a number of political critics of the takeover process, that these advisory firms have promoted M&A activity for their own self-interest.

A takeover could be the accidental result of a "greenmail" effort (i.e. a bidder that hoped to be bought off by a target company's management, but who found instead that his offer was accepted).

Finally, mergers can be induced by any of a number of motivations for divestitures by the previous owner of the company or division. These include such factors as a change in operations that removes a previously-existing synergy, or a recognition that a previous takeover had been unsuccessful. Family-owned businesses are often sold as a result of a desire by the owners to retire or sell out to diversify their wealth, or because they lack a competent successor within the family, or because they are unable to raise sufficient capital as an independent business to cover necessary modernizations or expansions. Frequently, a firm that has made a large acquisition will immediate put some of the lines-of-business of the acquired firm on the market for re-sale, either because they do not fit in with the acquiring firm's corporate strategy or because the firm cannot bear the debt load required to carry all of the acquired firm's assets.

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[1]See, for example, Schleifer, Andrie and Lawrence Summers, "Hostile Takeovers as Breaches of Trust", working paper, National Bureau of Economic Research, 1987.

[2]Davidson, Kenneth M., "Mergers and Acquisitions: Evolution of a New Industry" *Journal of Business Strategy*, January/February 1989.

At least some of the current wave of mergers has been prompted by a matching wave of divestitures on the part of conglomerates that had bought diversified businesses in the merger wave of the late 1960s. Casting doubt on the profit-maximizing explanations of mergers, Michael Porter[1] notes that more than 56% of the acquisitions made by a sample of 33 highly-diversified U.S. companies prior to 1976 had subsequently been divested, primarily due to disappointing results from the build-up of these conglomerates.

3.3 Regulatory Influences on Business Combinations

In addition to the economic and financial forces that will affect each of the various motivations for business combinations discussed above, the regulatory policies set by federal and provincial governments in Canada will affect the ability of firms to meet various legal hurdles facing their M&A plans. To some extent, although we do not provide a detailed review in this report, the U.S. and other national regulatory climates will also have a bearing on Canadian business combinations, to the extent that these contemplated mergers involve subsidiaries of foreign parents.[2]

Federal regulations include the Competition Act which limits mergers that enhance monopoly power; the Investment Canada Act and the Free Trade Agreement, which govern foreign takeovers; securities market regulations for federally-incorporate companies; and a variety of other regulations. The Ontario government sets rules for the takeover of provincially-incorporated firms. These federal and provincial regulations are reviewed in Appendix 3.

3.4 Impact of Trade Liberalization

The changing trade environment facing businesses in Canada and other countries will be an important factor in shaping trends in business combinations in the coming decades. The Canada-U.S. Free Trade Agreement (FTA), the prospects for further multilateral trade liberalization under the GATT, the changes in Europe brought by

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[1]Porter, Michael, "From Competitive Advantage to Corporate Strategy", *Harvard Business Review*, May/June 1987.

[2]For a review of the regulatory climate in 16 countries, including all of the G-7 countries, see Cooke, Terance E., *International Mergers and Acquisitions*, (Basil Blackwell; Oxford, UK, 1988).

integration of the EC economy, will all play a role in determining the organization of Canadian industry that can most effectively compete on domestic and global markets.

Since our trade with the United States represents the majority of Canada's merchandise and service imports and exports, the rules affecting Canada-U.S. trade will likely have the most direct impact on industrial structures in Canada. Our trade relationship with the U.S. will be significantly liberalized under the FTA. However, many of the rules under which the FTA operates are based on the GATT, and GATT changes will supercede FTA rules if they involve a more rapid or complete removal of trade barriers. Thus, the ongoing Uruguay Round negotiations will also be a potentially important factor in our bilateral trade with the United States.

The economic arguments in support of the FTA rested largely on the view that liberalized trade would lead to beneficial changes in the structure of Canadian industries, principally in the secondary manufacturing industries. Many of these industries had been established behind tariff walls that served to separate the Canadian and U.S. markets, and promote the existence of branch-plant operations designed to produce a full product line for the Canadian market.

The result, as has been widely documented by Canadian industrial organization economists[1], is that Canadian manufacturing industries are characterized by smaller scale, less efficient firms, and markets that are more concentrated than those in the United States. Free trade is intended to promote a restructuring of these industries, leaving fewer, larger and more specialized manufacturing plants designed to serve both the Canadian and U.S. markets, as price competition from imports forces firms to achieve efficient scale production. Since mergers are often a mechanism for engineering a change in the structure of an industry, it is widely expected that M&A activity will increase in those industries that have traditionally been among the more heavily protected segments of the manufacturing sector.

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[1]See Green, C. *op cit*, for a review of this literature. The seminal work in the field was done by Wonnacott, R.J. and P. Wonnacott (1967) *Free Trade Between the United States and Canada*. (Cambridge, Mass: Harvard University Press).

3.5 Impact of Financial Market Conditions

The recent wave of M&A activity around the world has been spurred in part by developments in financial markets, that have enabled deals to be funded that might have been impossible in previous decades. These developments include the following:

- The establishment of a liquid market in high-yield, non-investment grade bonds ("junk bonds"), particularly in the United States. These instruments have been particularly important mechanisms for funding the wave of leveraged buyouts in the U.S., and have eliminated size constraints that previously made very large firms invulnerable to takeover bids.[1] Recently, the junk bond market has experienced significant declines in the wake of financial difficulties among previous issuers, leading some analysts to conclude that a cooling in leveraged buyout deals is likely.

- The market for high-yielding subordinated debt has been smaller in Canada, where institutional investors have been more conservative and where the smaller size of the market limits the ability of institutions to establish sufficient liquidity in high-yielding bonds. The first investment fund targeted at junk bonds has only recently been established in Canada, while there are many such funds in the U.S. Some of the LBO financing that has taken place in Canada has involved very restrictive debt covenants being placed on the borrower, which may set a precedent that will make it difficult for future leveraged deals.

- Other financial market developments, including an increased supply of skilled financial and legal advisors to assist acquirers and the growth in the pools of capital held by pension funds, life insurance companies and other large institutions, have served to expand the ability of the system to fund takeover activity.

- Large trade surpluses and high levels of domestic saving have created a very large pool of capital in Japan, far in excess of the available domestic investment opportunities in that country. The result has been a wave of high-profile Japanese acquisitions around the world, particularly in the United States. Canada has seen only a limited amount of direct investment by Japan, and this investment has been largely in the resource sector, although there have been some investments in manufacturing.

3.6 Impact of Technological Change

Technological change can have a significant influence in generating the synergies that can make business combinations profitable:

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[1]The role of junk bond financing should not, however, be overstated. Jensen (1988) cites a study that found that high-yield and investment grade debt issues combined accounted for only 9.8% of tender offer financing in the U.S. over 1981-86.

1. Product research can often lead a company to discover innovative products that lie outside its existing line-of-business. While a firm might choose to establish a new firm or use a product license to bring its discoveries to market, the acquisition of an existing player in the relevant market can sometimes be an effective entry strategy. Caves et al[1] found some evidence of a linkage between R&D spending and diversification by firms into other industry sectors. Similarly, new product innovations can form the basis for a multinational to expand its focus into other countries, which sometimes prompts an acquisition of an existing firm in the target country.

2. Innovations in production processes can act to increase or reduce the extent of economies of scale, and thereby lead to corresponding increases or decreases in horizontal merger activity. The increase in corporate size before the turn-of-the-century was in part prompted by innovations in mass production technology, which have continued to increase the size requirements for low-cost production in this century. Recently, however, the emergence of flexible manufacturing technologies that enable customized production at relatively lower volumes has reversed the trend in scale economies in some sectors. Small steel mills (mini-mills) have been more profitable in the U.S. than the old giants of the industry.

3. There is a range of views among economists on the relationship between efficiency in the R&D process itself and company size. The Austrian economist Joseph Schumpeter argued that large firms were necessary to finance the investment costs associated with major innovations, suggesting that industries where technological competition was an important factor would be dominated by large firms. In contrast, Kenneth Arrow, among others, stresses the need for many competitors (and thus smaller firms) to generate the incentives for R&D. We discuss the evidence on this issue in the next Chapter. However, it is clear that many technological leaders in Ontario have been takeover targets in recent years, including Lumonics (lasers), Connaught (pharmaceuticals), and Spar (aerospace). In many cases, the Canadian firm was thought to be in need of a stronger and larger financial partner as a result of its need to finance R&D investments. In a smaller number of cases (most notably CAE, which acquired Link), the Canadian firm has made foreign acquisitions as a means of expansion.

3.7 Outlook for Business Combinations to the Year 2000

3.7.1 Overall Trends

Predicting longer-term trends in mergers and other business combinations is clouded by the fact that, as James Brander notes, the empirical evidence has still left us

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[1]Caves, R.E. et al, *op cit*, 1980.

with "no good explanation for the striking wave-like time series behavior of mergers".[1] and only a limited understanding of the relative importance of the various motivations for mergers.

While the recent global merger wave may have reached a near-term peak, the longer-term outlook is for a continuation in the growth of business combinations in Canada over the next decade. A number of factors underlie our expectation for a continued strong pace in M&A activity.

The *adjustment to liberalized trade* is expected to involve a significant restructuring of Canadian manufacturing industries, as firms adjust to increased competition in domestic markets and improved access to U.S. and other foreign markets. With bilateral free trade already being implemented and solid near-term prospects for a new multilateral GATT agreement, the next decade will be one of significant change in Canada's industrial structure.

Cox and Harris[2] predict long-term changes in average firm scale ranging from 0.9% in petroleum and coal to 43.1% in food and beverage processing. This is likely to be accomplished by a mix of exits of small, inefficient firms, mergers, and internal expansions.

Exits in many industries are often accomplished by the sale of one company to an existing competitor. In the food industry, for example, exiting firms often have brand names that still have considerable value in some markets, and which would be costly for a firm remaining in the industry to establish *de novo*. Recent examples include the sale of Allens juice brands and the purchase by Campbell and Borden of pasta and soup brands from Labatts (Catelli). In other cases, it is production assets that are valued by the former competitor. The merger of Molson and Carling, for example, was in part driven by the ability of the former to make use of the underutilized production assets of the latter.

International trade liberalization, and the emergence of a global marketplace in many industries, has already played a role in spawning M&A activity. U.K firms have

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[1]Brander, James, "Mergers, Competition Policy and the International Environment" in *Mergers, Corporate Concentration and Monopoly Power in Canada*, op cit.

[2]Cox, David and Richard G. Harris, "Trade Liberalization and Industrial Organization: Some Estimates for Canada", *Journal of Political Economy*, 1984.

been very active in recent years, using acquisitions as a mode of entry into new markets or a means of expanding their presence in others. Japanese firms, flush with capital as a result of strong export growth and facing limited domestic investment opportunities due to the high price-earnings ratios on Japanese equity markets[1], have also been major international buyers of corporate assets.

Among the notable examples of such transactions have been the purchase of Pillsbury by Grand Metropolitan PLC, the acquisition of the personal products business of Faberge by Unilever PLC, and the purchase of Thermos Company by Nippon Sarso.

Canada will increasingly be a participant in these international deals. In some cases, such as in the purchase of Pillsbury by Grand Met, Canadian subsidiary corporations form part of the foreign acquisition. The Canadian government is also actively promoting foreign investment in Canada, both through the liberalization of foreign investment rules in the FTA and through direct appeals to investors in Japan and other countries.

Furthermore, some Canadian companies seeking to emerge under liberalized trade as major global competitors have already been active in outward international acquisitions. Bombardier, for example, recently purchased Short Brothers PLC, a Belfast aircraft manufacturer, as a means of strengthening the existing position in the aerospace sector that it had acquired through the purchase of Canadair. Labatts purchased a small U.S. brewery as a means of expanding its American market presence.

The availability of outside mezzanine and equity capital to finance M&A activity is improving in Canada. To date, the high level of leveraged buyout activity associated with taking companies private in the U.S. has not been marked by a parallel development in Canada. Privatizations accounted for $74 billion in LBO activity in the U.S. in 1988, but only one such deal occurred in Canada in the same year. *Mergers and Acquisitions in Canada: The Monthly* [2] attributes this difference to the lack of adequate mezzanine (subordinate) capital and buyout expertise in the Canadian financial sector.

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[1]The average PE ratio in Japan was 100 times, compared to 21 times in the U.S. and only 14 times in Canada, according to Business Week's Global 1000 survey.

[2]*Mergers and Acquisitions in Canada: The Monthly*, July 1989.

Raising funds for buyouts has been hampered by institutional investor reluctance and the absence of a sufficiently liquid secondary market in high-yield instruments.

Recent developments suggest that Canadian capital markets may be gearing up for an increase in funding for buyouts. For example, Gordon Capital and Helix Investments raised $60 million for mezzanine funding, Schorder & Wagg, a major British merchant bank has established an $80 million buy out fund, and Canadian Corporate Funding has established two acquisition funds with a total of $165 million in capital. A number of U.S. funds that are flush with capital but finding tight competition for buyout opportunities are looking at entering the Canadian market. This increase in funding in Canada will probably go against the trend over the coming decade in the U.S., where institutional investors have recently become more cautious in their approach to high-yield debt investments.

The liquidity of some of Canada's major conglomerates suggests room for further acquisitions by these firms. According to *The Monthly*, BCE, Power Corp., Canadian Pacific, and Rogers Communications, all of which have been involved in past acquisitions, currently have either very strong balance sheets or large cash positions after recent divestitures.

The potential for divestiture activity in the near term remains strong for a number of reasons. In the petroleum refining sector, Imperial Oil will be forced to divest itself of recently acquired Texaco assets assuming the merger ultimately receives the approval of the Competition Tribunal. At the of writing, the parent company of Imasco, a major Canadian conglomerate, is subject to a potential change in ownership or restructuring, which could lead to a divestiture of Imasco and a subsequent sell-off of at least some Imasco divisions by the new owners. The long-awaited financial institution regulatory reforms could require some firms to divest themselves of non-financial subsidiaries.

Deregulation in general will be an important motivating factor for changes in industry structures, which in turn will prompt business combination activity. The elimination of some of the formerly tight boundaries between the "four pillars" of the financial sector has already led to a host of mergers in Canada. Deregulation in communications and transportation could lead to similar developments in these sectors. The anticipated privatizations of federal crown corporations could in some cases involve an acquisition by an existing corporation.

The aging population means that owner-operated businesses will increasingly be on the selling block. In many cases, when a business owner reaches retirement age, succession within the family is either not desired by descendents or not feasible due to the size of the business. Steinberg, R.L. Crain, and Laidlaw are just three recent examples where a lack of succession was a factor in the sale of the founding family's interests.

3.7.2 Outlook for Key Industry Segments

Of particular interest to the Ontario Ministry of the Environment is the outlook for business combinations in five major heavy industries: chemicals, pulp and paper, petroleum refining, iron and steel, and mining and smelting. In general, with the exception of petrochemicals, these primary manufacturing industries are not among those that will be most heavily affected by economic restructuring under liberalized trade. The latter group is widely regarded to include food and beverages, clothing and textiles, leather, furniture, electrical products and transportation equipment, all of which are involved in secondary manufacturing. The food and beverage sector also has a significant number of family-controlled firms that could be sold in the coming decade for lack of a viable successor.

A recent review of **chemicals industry** merger prospects in *Mergers and Acquisitions in Canada: The Monthly* [1] projected that there will continue to be a significant volume of transactions in this sector in the early 1990s. Much of the activity will involve a continuation of the extensive restructuring process that has been underway in this industry since 1979, prompted initially by a rise in fuel prices and weak demand for petrochemicals. Divestitures of divisions will be a common feature of the restructuring of this industry, as firms sell off smaller lines to focus on their core business areas. Du Pont, for example, has divested itself of its explosives division and part of its specialty plastics division, while Polysar sold its latex division.

According to a review of the industry conducted for the Ontario Premier's Council[2], the Canadian industry enters the post-free-trade environment as a small player on

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[1] *Mergers and Acquisitions in Canada: The Monthly*, March 1989.

[2] Premier's Council, *Competing in the Global Economy*, Report of the Premier's Council, Volume II, 1988.

the global chemicals scene, focussed primarily on slower growing commodity chemicals rather than on the more rapidly growing specialties segment. In the specialty segment, Ontario plants have favourable wage rates and comparable feedstock costs relative to the U.S, but are currently at a disadvantage in terms of scale economies and capital costs. The Premier's Council Report anticipates that the restructuring of the industry in Ontario would have to be focussed on increasing the role of Ontario firms in the specialties segment, which could entail mergers of smaller firms that are unable to finance the high R&D costs in this segment.

In the rest of the chemicals industry, the direction of restructuring in the chemicals industry is not likely to be dependent on further increases in concentration. First, according to the Premier's Council report, Canadian plants are already at a comparable scale to those in the U.S. in the major industrial chemicals segments that account for the bulk of current industry activity in Canada. This result appears to be consistent with the finding of Cox and Harris[1], who forecast a relatively modest 6% increase in average firm scale in the chemicals industry as a result of liberalized trade.

Second, multi-plant economies of scale are not likely to be achieved through further mergers that link individual plants, since a high proportion of the Canadian activity is already under the control of international chemicals firms.

Third, the high degree of foreign ownership is likely to mean that further mergers will be linked to parent company merger activity, rather than to any Canadian developments.

In fact, many investment analysts believe that U.S. parent companies will act to privatize their non-wholly-owned subsidiaries in Canada, in order to eliminate the minority interests that can stand in the way of a necessary rationalization under free trade. In the chemicals industry, both du Pont and Union Carbide have publicly-traded subsidiaries in Canada that might at some point be bought out entirely by the parent company. Imperial Chemicals undertook such a move with respect to C.I.L. in 1988, while a bid by Hoescht for the part of Celanese Canada that it did not previously own was rejected by minority shareholders in 1989.

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[1]Cox, David and Richard G. Harris, "Trade Liberalization and Industrial Organization: Some Estimates for Canada", *Journal of Political Economy*, 1984.

Thus, on balance, we foresee continued transactions related to divestitures of non-core lines-of-business, and some potential for mergers in the specialties segments. The remaining ownership changes are likely to be tied to changes in parent company ownership, or buyouts of minority Canadian interests by foreign parent companies.

The Canadian **pulp and paper industry** saw a recent resurgence in M&A activity, including the 1988 acquisition of Reed Incorporated by Daishowa Forest and the takeover of Consolidated Bathurst by Stone Container. A previous takeover wave in the early part of the decade had seen the acquisition of Abitibi, MacMillan Bloedel and Canadian International Paper by Olympia and York, Noranda and CP respectively.

As a result of the recent takeovers, Canadian ownership in the industry has fallen to 65%, down from 75% in the early 1980s, according to a review of merger prospects for the industry by Ernst & Young's Leonard Delicaet[1]. He suggested that the upswing in takeover activity reflects an economic environment that will continue to make such buyouts attractive for foreign investors. Among the key factors promoting acquisition relative to new investments in Canada are the lower cost of acquisition relative to greenfield capacity construction, and the ability of acquirers to avoid the lengthy and costly process of environmental approvals associated with a new mill. Canada is attractive to foreign investors due to its abundant fibre supply, low energy costs, free-trade access to the U.S., and the availability of skilled Canadian joint venture partners, financing vehicles and a trained labour force.

A report by Woodbridge, Reed and Associates[2] found that while wood supply would not be a constraint to expansion of the forest products sector in Ontario, potential investors perceive that much of the most economically accessible wood is committed to existing holders of Forest Management Agreements. Thus, new entrants might pursue an acquisition of an existing player in the market as a means of gaining access to these wood supplies.

The timing for takeovers in this sector is also good. Although the recent downturn in the high-risk bond market will have dried up this source of capital and the

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[1]Delicaet, Leonard, "Canada Being Globalized" *Pulp and Paper Journal*, June 1989.

[2]Woodbridge, Reed and Associates,*A Study of the Ontario Forest Products Industries*, (Report to the Ontario Ministry of Natural Resources; 1987)

industry may be headed for a slower period, Delicaet notes that the good profits earned in the past five years have strengthened the balance sheets of Canadian pulp and paper companies, leaving liquidity that could be used by a buyer to finance the purchase of these firms.

While domestic firms may be targets of takeovers, there are reasons to expect that they may themselves become active in the M&A market. The industry has long been forced to compete with international suppliers for its critical share of the U.S. market. The recent strengthening of the Canadian dollar against the currencies of other paper-producing nations has exposed the Canadian industry to tougher international competition.

The Premier's Council reported concluded that "Ontario producers continue to operate older equipment that is below world economies of scale." Cox and Harris' model predicts that global trade liberalization would promote only a modest expansion in average plant scale in the industry, but a considerable improvement in labour productivity and exports.

Woodbridge Reed noted the capital intensity of the industry and the high financing costs associated with needed investments in new equipment. As a result, there may be some room for mergers to play a role in providing strong financial partners for firms that are unable to finance necessary capital improvement. In addition, a number of paper companies are seeking to increase the focus of their businesses by sales and acquisitions of assets, and we expect a significant level of such activity in the next decade.

Delicaet noted that Canadian forest product companies have been looking actively at acquisitions outside Canada, with a goal to diversifying product lines, reducing exchange rate fluctuation risks, acquiring low cost fibre resources, solidifying a position in export markets and gaining skills and financial strength from international joint ventures.

The steel industry in Canada has historically been quite competitive in its major markets in Canada and the United States, and has recently invested heavily in plant modernization. Canada-U.S. trade liberalization will not be a major factor in directly promoting mergers relating to rationalization in this sector.

Some of the companies in this sector are widely held and thus are potential takeover targets. Algoma is owned by Dofasco which is itself rumored as a takeover candidate. Another possible source of ownership changes or joint venture linkages comes

from the potential for interest in Canada on the part of Japanese steel companies, who have been recently active in joint venture arrangements in the United States.

Firms in the **mining and smelting** industries have long had to compete on international metals markets, and thus trade liberalization on its own will not generate merger and acquisition activity in this sector for rationalization purposes. However, foreign takeovers remain a strong possibility, with Canada's resource supplies an attraction to foreign buyers that might perceive the current investment climate in Canada more favourably now that government policies do not constrain such acquisitions. Gaining access to scarce resources is often a motive for acquisitions in the resource sector, where such acquisitions can often be less costly than new exploration and mine development. Smaller companies with major finds often look to joint ventures with stronger firms in a better position to finance development, or they may be sold to such firms. For these reasons, we expect that the high volume of mergers and acquisitions that has characterized the Canadian resource development sector will continue in the coming decade.

Petroleum refining in the near term is likely to see the completion of the takeover of Texaco's former Canadian assets by Imperial Oil. Further acquisitions in this sector could be hampered by Competition Act considerations, since Imperial already faced regulatory difficulties as a result of the significant share of the refining industry that will come under its control. Imperial will be divesting itself of some of the assets involved in its acquisition. There will continue to be a high level of activity among upstream producers seeking to divest assets, although Ernst & Young mergers specialists expect a moderation in the pace of this activity from the torrid pace of recent years.

3.7.3 U.S. and Japanese M&A Outlook

U.S. merger activity often has important spillovers on Canadian trends. A move to merge the activities of two parent companies is typically matched by a merger in Canada. This factor will be particularly important in the consumer goods manufacturing industries, where U.S. subsidiaries are generally the leading firms in the Canadian market. Japanese M&A activity is increasingly oriented towards foreign acquisitions, which could involve Canadian firms or U.S. parent companies with subsidiaries in Canada.

According to W.T. Grimm & Co.[1], 1989 could represent a peak in the number of "mega-deals" in the United States. Stock market turmoil surrounding acquirers and their targets, a loss of investor confidence and potential difficulties in raising financing were cited as factors that would contribute to a downturn in large-scale M&A activity.

A survey of U.S. leveraged-buyout specialists reported in *Mergers and Acquisitions in Canada* in July, 1989 suggested that even those involved in financing LBO activity recognize that the heady-days of growth in LBO activity will be coming to a close, and that a more moderate pace of growth in transactions is in store for the industry.

Future M&A activity by Japanese firms is expected by *Japan M&A Reporter* to increase significantly for two reasons. First, it is important for the Japanese to dispel the notion they are getting a free ride by showing commitment to their markets through investment. By actively helping to boost host economies they will buy goodwill, as well as local marketing expertise. Second, as Japan's government relaxes some of its trade rules Japanese companies will seek to acquire businesses abroad that can benefit from selling into Japan. For example, Japan's beef import quotas were recently increased and Japanese firms responded by buying cattle ranches in Australia and the U.S.

The chemical industry in Japan is at present a very domestically-focused industry which is poised with surplus cash to pursue a global strategy. Among paper firms in Japan, a number of joint venture deals with U.S. and Canadian firms are anticipated. Japanese firms have expressed an interest in buying trees and mill capacity. The food industry in Japan has considerable re-investment funds and limited investment opportunities at home. Steel, car parts, and consumer goods are also industries with a potential for high Japanese M&A activity, according to *Japan M&A Reporter*.

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[1] As cited in the Globe and Mail, October 31, 1989.

4. ECONOMIC IMPLICATIONS OF BUSINESS COMBINATIONS

4.1 Introduction

The current wave of merger and acquisition activity, and the changes in the ownership and industrial structure it will engender, could have indirect effects on environmental protection, as a result of the impacts of these changes on firm performance. Stronger, more effective corporate entities would be better positioned to generate the cash flows necessary to justify investments in environmental protection. Thus, a key question for environmental regulators is whether or not the M&A process will strengthen or weaken the Canadian economic structure, and the financial health of individual companies in Canada.

We have already examined the various theories on the motivating factors for mergers and acquisitions in Chapter 4. Each of these theories, if valid, has implications for the impact of mergers on the performance of Canadian industries. If, for example, mergers are motivated by potential efficiency gains or managerial improvements, then one would expect a salutary impact on firm performance. In contrast, if the M&A process is being motivated primarily by managerial preferences for corporate bigness, or by aggressive promotion by financial institutions, then the implications could be quite the opposite. In this Chapter, we review the available evidence on the implications of business combinations on firm and industry performance and economic welfare.

The evidence comprises two, quite separate and extensive bodies of literature that form the basis of our review in this Chapter. The first body of evidence, largely from the field of financial economics, examines the results of the takeover process directly, by considering the performance of individual firms involved in takeovers or the judgement of stock markets on announced mergers.

The second body of literature, incorporating a large part of the empirical work in the field of Industrial Organization economics, looks directly at the differences in performance across industries with varying firm sizes, diversification, and industrial concentration. Since the M&A process affects these industry characteristics, the evidence on how such characteristics influence economic performance is relevant to an understanding of the costs and benefits of business combinations.

4.2 Evidence on the Takeover Process

4.2.1 Existence of Gains in Firm Valuations

The major body of research directly related to the takeover process surrounds the issue of whether or not mergers and acquisitions generate economic gains to acquiring and acquired companies. These private gains need not translate into positive benefits for the economy as a whole, since they could arise, for example, as a result of increased monopoly power. Nevertheless, for those theories that suggest that takeovers improve economic efficiency through scale economies, other synergies or better management, a necessary but not sufficient proof would lie in demonstrating that the combined firm achieves superior performance for investors than the firms did separately.

One method for testing for such gains involves the examination of movements in equity prices around the time of the announcement and completion of a tender offer by one firm for the shares of a second firm. According to the efficient markets theory, the extent to which there is an abnormal movement in the sum of the total market values of the shares of the acquiring firm[1] and the target firm represents the market's judgement of the impact of the merger on the combined value of the two firms.

The literature concerning such tests is very extensive, and primarily relates to U.S. acquisitions. Jensen and Ruback[2] provide an excellent summary of this literature, which has been updated in a very recent review by Jarrell, Brickley and Netter.[3]

The various studies conclude that takeovers generate substantial gains in firm values, with the combined market value of the acquiring firm and the target firm rising by about 8%. Most of these gains accrue to the acquired firm's shareholders, who reap

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[1]The studies use a Capital Asset Pricing Model or other approaches to separate out the normal returns that would have been earned in the absence of a merger announcement.

[2]Jensen, Michael C. and R. Ruback, "The Market for Corporate Control: The Scientific Evidence", *Journal of Financial Economics*, April 1983.

[3]Jarrell, Gregg A., James A. Brickley and Jeffry Netter. "The Market for Corporate Control: The Empirical Evidence Since 1980", *Journal of Economic Perspectives*, Winter 1988.

premia in the range of 30% to 50%, with takeover premia being on the high side in recent years.[1]

Acquiring firms increase in value by about 4% in hostile takeovers, but show no gain in mergers. The bidding process apparently forces firms to pay all or nearly all of the potential gains to win the target firm's shares. Some studies for the U.K. have shown losses for shareholders of acquiring firms, suggesting a degree of overpayment.

The Canadian evidence was examined in a study conducted by B.Espen Eckbo[2], who considered a sample of 413 target firms over 1964-83. He found that the target firm's shares showed a 3.6% abnormal gain in the month of the announcement (and a further abnormal gain in the preceding months), while the acquiring firm's shares also gained, by a smaller, 0.8% in the month of the announcement.

The exception appears to be for acquisitions undertaken by government-owned corporations. A study by Eckel and Vermaelen[3] found abnormally negative returns for a (small) sample of Canadian firms subject to federal and provincial government bids, perhaps due to fears that the firm will be run poorly or for non-profit motives after the change in ownership. (However, the same study found a positive impact on market valuations when the target had already been subject to government regulation.) A further study by Boardman, Freedman and Eckel[4] found that Domtar stock exhibited negative abnormal returns following an announced purchase offer by two Quebec crown companies.

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[1]The takeover premium is defined in this case to include the increases in the value of the firm in the immediate period prior to a takeover announcement, or as a result of a bid by a second firm in the case of an acquisition that is the end result of a bidding war. This definition differs from that used in the data reported by W.T. Grimm for the U.S. or Venture Economics for Canada, which merely records the premium in the offer price over the most recent trading price for the target firm, and ignores the effect on values associated with information on a potential takeover prior to the bid announcement.

[2]Eckbo, B. Espen, "Mergers and the Market for Corporate Control: The Canadian Evidence", *Canadian Journal of Economics*, 1986.

[3]Eckel, CC. and T. Vermaelen, "Internal Regulation: The Effects of Government Ownership on the Value of the Firm", *Journal of Law and Economics*, 1986.

[4]Boardman, A., R. Freedman and C. Eckel, "The Price of Government Ownership", *Journal of Public Economics*, 1986.

4.2.2 Evidence on the Sources of Gains

As noted, the stock market gains to mergers could come from a variety of sources, including real economic improvements, monopoly power, previous stock market underestimates of the value of the acquired firm, stock market overestimates of the benefits from a merger, and so on. As noted by Jarrell et al[1], much of the recent literature (i.e. since 1980) has focused on attempts to identify the source of stock market gains.

The evidence on this issue is mixed, in our judgement. In general, studies based on stock market valuations have tended to reject non-efficiency-gain explanations of the gains in firm valuations. However, some of the studies that have directly examined the post-takeover performance of firms have not found superior results relative to prior to the merger.

In Chapter 3 we noted that one potential source of merger gains to acquirers could arise as a result of an undervaluation by the stock market of a target company. This could arise, for example, if shareholders fail to recognize the benefits of long-term investments that temporarily depress earnings in the short-run, or if stock markets in general are subject to swings in valuations due to speculative booms and busts that are not related to changes in underlying company values. Note that takeovers designed to realize financial gains by purchasing such mis-valued target companies would merely involve a wealth transfer from the target firm's shareholders (who sell out too quickly for too little) to the acquiring firm, and could indeed take place where the economics of separate operation are superior to a merger. Casting doubt on this cause for mergers are studies that show that firms that have spurned hostile takeover offers revert to pre-tender offer values, which would not be the case if the offer revealed information to the market about potential undervaluations.

A related argument stresses that the undervaluation can by caused by the short-sighted valuations placed on firms by institutional investors who are overly concerned with short-run returns. A Security and Exchange Commission study cited by Jarell *et al* found no evidence of that takeover targets were more likely to be found among firms that had a high degree of institutional stockholdings, and also found evidence that the market reacted favourably to long-term investment announcements.

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[1]Jarrell et al, *op cit.*

However, there is also a substantial body of evidence to suggest that the stock market is subject to speculative swings that cannot be explained by underlying changes in the future value of dividends.[1] F.M. Scherer[2] argues that many of the takeovers that took place during the early 1980s can be explained by firms that anticipated an easing of monetary policy and a decline in interest rates later in the decade, which had the effect of increasing the present value of corporate earnings from the acquired companies. He contends that the evidence surrounding failed takeovers cited above is not conclusive, since it could be that the deals that do not go through tend to be those where the potential undervaluations were too small to permit a premium offer by the bidder sufficient to conclude the acquisition.

Other studies using the stock market valuation approach tend to point to efficiency-gains or improved management as the sources for the measured gains in firm valuation, by rejecting many of the non-efficiency related hypotheses.

Ekbo[3] examined changes in the share values of competitors of firms whose horizontal merger plans were challenged by antitrust authorities. If the merger was expected to result in a tighter oligopoly (control of the market by fewer firms) and a reduction in price competition, its consummation would be of a benefit to other firms in the same industry. However, Ekbo found no evidence of a drop in the rival firms' share values around the date when an antitrust challenge to a proposed merger was announced. On the other hand, there is also no evidence that shareholders of these rival firms fear a loss in market share to a new more efficient post-merger competitor, since their share values tend to increase slightly after the original announcement of the merger.

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[1]See Schiller, *op cit.*

[2]Scherer, F.M., "Corporate Takeovers: The Efficiency Arguments", *Journal of Economic Perspectives*, Winter 1988.

[3]Eckbo, B. Espen, "Mergers and the Market Concentration Doctrine: Evidence from the Capital Market" *Journal of Business*, 1985.

Other studies found no evidence that a transfer in wealth from bondholders[1] or labour[2] is the source of the stock market gains to merging firms. There is some evidence that tax effects have been important sources of gains in a minority of mergers (perhaps 20% of U.S. mergers, according to one study[3]), and that effective tax rates vary by firm size and structure in Canada,[4] and tend to favour larger corporations over mid-sized firms. However, the evidence suggests that such tax effects are not the major driving force for merger gains.

Although the stock market evidence appears to leave efficiency gains as the only remaining potential explanation, studies that have examined the post-merger performance of firms in Canada and the United States find only mixed evidence of such gains. We have already noted Porter's finding that many of the conglomerates formed by mergers in prior to 1976 have subsequently divested the assets acquired.

A study by Ravenscraft and Scherer[5] based on U.S. data found little evidence of efficiency or management improvements for a sample of 6,000 mergers from 1950-76, based on data tracking the performance of individual lines-of-business. In fact, their study found that prior to the merger the acquired firms were doing well. The lines of business involved in the acquisition were frequently divested later, following generally poor profit performance. Even for those acquisitions not subsequently divested, post merger returns were generally lower than prior to the merger. Another study of mergers from the same period by Mueller[6] confirmed these findings.

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[1]See Denis, D.J. and J.J. McConnell, Corporate Mergers and Security Returns" *Journal of Financial Economics*, 1986; *and* Lehn, K. and Annette Poulsen, "Sources of Value in Leveraged Buyouts" in *Public Policy Toward Corporate Takeovers*, (Transaction Publishers; New Brunswick, N.J.; 1987).

[2]See Brown, Charles, and James Medoff, "The Impact of Firm Acquisitions on Labour" NBER Working Paper, 1987.

[3]Auerbach, A. and D. Reishus, "Taxes and the Merger Decision" in Coffee, J. and L. Lowenstein, editors, *Takeovers and Contests for Corporate Control*, (Oxford University Press; Oxford; 1987)

[4]Wolfson, M.C. (1987), "Notes on Corporate Concentration and Canada's Income Tax. (Ottawa: Statistics Canada: Social and Economic Studies Division).

[5]Ravenscraft, David and F.M. Scherer, *Mergers, Sell-Offs and Economic Efficiency* (Brookings: Washington: 1987)

[6]Mueller, Dennis C., "Mergers and Managerial Performance", FTC Working Paper.

In Canada, since inefficiencies due to small scale are thought to be more prevalent, it is possible that there is a greater potential for mergers to generate real economic gains. A study by Jog and Riding[1] examined the performance of a sample of 75 Canadian firms that had been only partially acquired (since after complete acquisitions the shares of the acquired company would no longer trade on the market). They found no evidence of a decline in the stock market performance of these companies following the partial acquisition, a tendency for accounting returns on equity to improve, but no increase in asset turnover or net operating margins. Thus there is at least no direct evidence of a negative impact of these partial acquisitions, and a modest degree of support for theories that link takeover premia to the potential for management improvements or other gains in profitability.

4.3 Evidence Based on Industry and Firm Performance

In addition to the evidence from studies examining the takeover process itself, there is a large body of empirical literature that examines the performance of industries and firms and tests for differences associated with firm sizes, diversification, and industry concentration. Since M&A activity in turn results in identifiable changes in these various elements of firm and market structure, these studies represent an additional source of information on how business combinations affect the Canadian economy.

The empirical literature in this area encompasses hundreds if not thousands of individual studies. It would therefore not be practical for the purposes of this report to review the studies individually. Rather, we attempt to provide a broad summary of the types of findings that have been reached in the literature.

4.3.1 Tests of the Impact of Industry Concentration

Horizontal mergers (those between two firms in the same industry) act to reduce the number of firms in a market and increase the market share held by the leading firms. Thus, the costs and benefits of horizontal mergers will in part be determined by the economic consequences of increased concentration in Canadian markets.

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[1]Jog, Vijay, and Allan Riding, "Post-Acquisition Performance of Partially Acquired Canadian Firms" in *Mergers, Corporate Concentration and Power in Canada, op cit.*

There is an extensive literature that examines the relationship between the degree of concentration in a market (as measured by the market share of the leading four or eight firms, for example) and various measures of profitability. The studies attempt to link concentrated industries with monopolistic pricing behavior, which in turn may show up in superior rates of return on assets or above normal markups on costs[1]. In the absence of strong economies of scale, monopolies or industries dominated by a few large firms that behave monopolistically tend to reduce economic welfare, by raising prices to consumers and reducing industry output.

U.S. studies generally confirm that industries with high concentration and barriers to entry facing new competitors[2] earn superior margins and returns on assets, which are taken by many economists to be proof that concentration can lead to monopolistic behavior.[3]

Similar conclusions have been reached in Canadian studies[4], although some studies have found that some of the potential monopoly profits are lost due to inefficiencies associated with small scale production. One of the most recent and thorough examinations of the interactions between industry structure and monopoly profits was conducted by Caves *et al* [5]who found a positive relationship between industry concentration and monopoly profits, particularly for industries with low import penetration and high barriers to entry for new firms.

Other studies, generally based on U.S. data, have linked high concentration and monopoly profits to regressive changes in the income distribution, with the monopoly

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[1]The linkage between observations of high accoutning rates of return and high economic returns (i.e. monopoly profits) is itself a matter of controversy, with some economists (most notably F. Fisher of M.I.T.) asserting that accounting rates of return need not imply anything about economic returns due to the different treatment of depreciation.

[2]Such barriers include such factors as brand name advantages or high capital costs to entry.

[3]A more detailed review of this literature is provided in Scherer, F.M., *Industrial Market Structure and Economic Performance (2nd Edition)*, (Rand McNally; Chicago; 1980).

[4]These include Bloch, H. "Concentration and Profitability in Canadian Manufacturing: An Indirect Test of the Effect of Aggregation", *Canadian Journal of Economics* February 1981 *and* McFetridge, Donald. "Market Structure and Price-Cost Margins", *Canadian Journal of Economics* August 1973.

[5]Caves, R.E. et al, *op cit*, 1980

profits being an important source of income for the most wealthy families and their descendents.

Some economists associated with the "Chicago School" approach to industrial organization have argued that the available studies do not demonstrate the existence of non-competitive prices, since it could be that industries dominated by a few large firms are those where superior efficiency gives such firms both high market shares and high profits relative to their smaller rivals.[1] Non-competitive behavior is held in check, in the view of these economists, by the potential for entry by new rivals if prices are pushed up by the incumbent firms.[2] The evidence on which of these two theories is correct is not fully conclusive at present, although Canadian competition policy is predicated on the acceptance of the view that high concentration is associated with monopolistic pricing.

Since the pioneering work of Eastman and Stykolt[3], many studies have confirmed a tendency in Canadian manufacturing industries towards sub-optimal scale, with excess costs covered by higher, non-competitive prices that are sheltered from import competition by tariffs and maintained domestically because of the small number of competitors. The Caves *et al* study cited above also linked firms' abilities to exercise monopoly power to protection from imports.

Under liberalized trade, many industries will see a significant increase in import competition. With competition provided by imports, horizontal mergers may form a key part of the necessary economic restructuring that free trade is intended to promote, by reducing the number of firms and increasing their average size. As we noted in Chapter 2, many of the studies that have examined the implications of free trade stress the need to increase the scale of Canadian manufacturing firms, particularly in secondary manufacturing. Caves *et al* found that Canadian manufacturing firms were on average 25% below their U.S. counterparts on their measure of technical efficiency, with a significant percentage of this difference accounted for by scale factors.[4]

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[1]See for example Demsetz, H., *The Market Concentration Doctrine*, (AEA-Hoover Policy Studies: 1973)

[2]This has come to be known as the theory of "contestable markets".

[3]Eastman, H.C. and S. Stykolt (1967). *The Tariff and Competition in Canada*. (Toronto: Macmillan).

[4]Several other studies have confirmed that the Canadian manufacturing sector offers significant unexploited economies of scale, including Gorecki, P.K. *Economies of Scaela and Efficient Plant Size in Canada*

Thus, where import competition offers a sufficient check against non-competitive pricing in Canada and additional scale economies are attainable, horizontal mergers may well be of net economic benefit to Canada, by lowering costs of production while not reducing price competition.

Other studies have tested the relationship between industry concentration and research and development. These studies have examined whether there is a linkage between firm sizes and research and development intensity (i.e. R&D spending as a percentage of sales) or patents, to ask whether or not an industry made up of, say, five large firms would do more R&D or find more innovations than if it had say, ten firms each of which was half the size.

The studies tend to show that a moderate degree of concentration and firm size increases total R&D or patents, but that very concentrated industries are less likely to invest in innovations. David Teece[1] also cites evidence that cooperation in R&D through looser forms of business linkages (joint ventures, licensing, etc.) offers benefits by reducing wasteful duplication of efforts and by sharing the research results more widely.

Other studies have tested the implications of industrial concentration for the business cycle, based on the theory that oligopolies (industries dominated by a few firms) may be reluctant to adjust prices to a weakening of demand during a downturn, in order to avoid disrupting monopolistic prices that had been set by tacit collusion. These studies find some support for less price fluctuation, and thus greater output and employment fluctuation, in oligopolies.

One possible criticism of takeover financing in recent years, particularly in the case of the increasingly popular leveraged buy-outs (LBOs), is that the overall balance between equity and debt financing has been tilted towards greater use of debt. High debt loads could lead to more frequent bankruptcies, with the associated real costs of corporate reorganizations. Mackness[2] warns that M&A and LBO activity has "rendered the

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(Ottawa: Ministry of Supply and Services: 1976); and Daly, Donald and D.C. McCharles "*Canadian Manufactured Exports* (Institute for Research on Public Policy: Montreal: 1986).

[1]Teece, David "Reconceptualizing the Corporation and Competition: Preliminary Remarks" in *Mergers, Corporate Concentration and Monopoly Power in Canada, op cit.*

[2]Mackness, W. (1988). "Canadian corporate finance and the great North American credit binge". *Business Quarterly*. Spring 1988.

underlying financial structure (in North America) fundamentally weaker". The financial system may therefore be much more vulnerable in the next recession than it has been in past downturns, particularly in the United States where LBO deals have been most prevalent. A recent study by Paul Asquith found that non-investment grade bonds issued prior to the most recent merger wave had a high subsequent rate of failure, although it will be too early to judge how the most recently issued junk bonds will fare until we experience an economic downturn.

4.3.2 Tests of Impact of Vertical Integration

As we noted in Chapter 3, there are several potential motivations for vertical integration (merging the operation of a firm with one or more of its supplier), including increasing monopoly power, reducing the distortions arising from monopoly power at two successive levels of the production chain, or reducing costs by improving the coordination between two stages of production. Brander[1] was not able to identify much previous work on testing these theories using data on vertical mergers, although Ravenscraft and Scherer[2] found evidence of poor returns to the firms that acquired upstream suppliers or downstream customers in their overall study of merger performance.

4.3.3 Managerial Performance and Corporate Concentration

Conglomerate linkages between firms in different industries may be motivated by a number of factors, including the tax considerations discussed above, as well as the potential use of strong managerial resources across several firms.

Widely diversified holding companies are well placed to acquire the debt capital needed to play the high-leverage takeover game. In Canada, there has been significant public policy attention paid to conglomerate mergers and the resulting level of corporate concentration – defined as the share of total industrial assets controlled by the largest few corporate groups. This public policy review has included hearings before Parliamentary committees as well as a Royal Commission on Corporate Concentration, and have focused on the potential political consequences of the significant share of the economy controlled by the largest corporate groups.

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[1]Brander, James, *op cit.*

[2]Ravenscraft, D. and F.M. Scherer, *op cit.*

Despite this attention, there has been little in the way of concrete evidence of any significant problems arising from these corporate linkages. The Royal Commission of Corporate Concentration Report did not recommend any sweeping public policy moves to restrict conglomerates in Canada. A number of popular business writers, including Diane Francis[1], and a few economists (most notably William Stanbury) have cited the role of business lobbyists and political contributions in influencing the policy process, but do not prove that one large firm has any more evidence than, say, 100 smaller firms working through their industry association. A recent study by Richard Caves using U.S. evidence reaches the conclusion that greater political success is achievable through concentrated ownership, although this might not generalize to the Canadian parliamentary system.

In terms of their direct effect on competition within industries, conglomerates can play an important role in increasing market competition. Caves et al[2] found that diversifying firms tend to enter industries that are moderately concentrated. Large conglomerates may be able to overcome entry barriers that would otherwise keep new entrants out of an industry (for example, by being able to finance large upfront capital and advertising costs.) Other studies have found mixed results when attempting to test for the relationship between diversification of firms and the degree of monopoly profits in the markets in which they operate.[3]

The other impacts of mergers between unrelated firms come from the changes in the structure of management and ownership. A number of studies have examined the extent to which firms with a large outside shareholder (such as the conglomerate holding company) can outperform widely-held firms where shareholders have less of an incentive to closely monitor the performance of managers and less ability to replace poor managers. The tests generally show superior profitability for firms that are either owner-managed (such as firms after a leveraged buyout by management) or controlled by a large shareholder, relative to widely held firms. They also have found that

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[1]Francis, Diane, *Controlling Interest: Who Owns Canada* (Macmillan: Toronto: 1986)

[2]Caves, R.E. et al, *op cit.*

[3]See Clarke, Roger, *op cit.*, for a review of this literature.

one mechanism for exercising control within a conglomerate, the granting of incentives tied to profitability in the manager's contract, leads to superior rates of return.

5. IMPLICATIONS FOR ENVIRONMENTAL PROTECTION IN ONTARIO

5.1 Introduction

As discussed above, Ontario and Canada have seen a significant merger wave across a broad range of industries, including many of those most closely regulated by the Ontario Ministry of the Environment. Mergers and acquisitions involving heavy-industrial firms operating in Ontario in the past few years have included Stelco's merger with Jannock's steel operations, Dofasco's acquisition of Algoma, the Imperial Oil merger with Texaco Canada, Société des Cements Francais purchase of Lake Ontario Cement, and Noranda's merger with Falconbridge. While the present merger wave may have hit a near-term peak in 1989, there is likely to be a continuation of strong levels of M&A activity to the year 2000.

The primary purpose of this study was to develop hypotheses and evidence on the potential implications of recent and future business combinations for environmental protection in Ontario. Such implications can arise directly, in the sense that merged firms have either superior or inferior environmental performance. Indirect impacts on environmental performance could arise through the linkage between economic performance and the regulatory process.

We undertook a broad review of the environmental protection literature, including contacts with the leading researchers on the economics of regulation in both academia and governments. Our review suggests that empirical work on this topic is still in the formative stage. Although some interesting results have been achieved in preliminary work with U.S. data, additional studies with these data, and the development of similar data for Canada and Ontario, will be necessary to confirm some of the hypotheses discussed below.

In the previous Chapters, we outlined the theoretical and empirical evidence on the economic impacts of business combinations. Section 5.2 develops hypotheses and reviews the evidence on the nature of the linkage between these economic impacts and environmental regulations. Section 5.3 focuses on the potential direct linkages between business combinations and environmental performance. Section 5.4 offers guidance for future research that the Ministry might wish to pursue on this issue, particularly in view of the limited empirical evidence found in our literature review.

5.2 Business Combinations, Regulations, Enforcement and Compliance

5.2.1 Combinations, Economic Performance and Achievability

The first potential linkage between business combinations and environmental protection arises as a result of the consideration of economic impact factors in the setting of environmental standards and timetables for their achievement.

Environmental regulations can impose significant costs on industry (and municipalities). Thus, any type of cost-benefit approach to environmental regulatory policy will generally include a consideration of the costs in industrial competitiveness, employment and investment that might be attributable to regulatory requirements.

This may be accomplished either informally, by allowing firms additional time to respond to tighter standards if faced with financial difficulties, or in a formal process that incorporates economic analyses in the design of standards and policies. The latter approach can be instituted by either requiring a formal cost-benefit justification for environmental standards, or by setting a cut-off point in terms of negative economic impacts that will not be surpassed.

Ontario is moving towards the adoption of a "Best Available Technology Economically Achievable" (BATEA) approach to environmental policy. Drawing on a similar policy in use in the United States, the BATEA concept in essence calls for the maximum technically achievable environmental performance, subject to a constraint that costs to Ontario firms and industries be limited to those that are economically achievable. While various definitions of economic achievability could be developed, the general notion is one in that seeks to preserve both the short-term financial and longer-term economic viability of the regulated firm.

In the case of the U.S., which has an observable history of operating under this approach in a formal sense, there is direct evidence that regulators have considered business failure risks in enforcing environmental regulations. According to EPA economists, regulations are initially designed so that factors such as the expected impacts on plant closures, unemployment and product prices are taken into account. A variety of indicators, including appropriate firm financial ratios, are used to project the likely impacts on individual facilities that are subject to regulation. Once in place, the EPA's Office of Compliance and Enforcement has adopted an approach known as the ABLE model to judge the ability of firms to meet spending requirements imposed by environmental regulations.

Only mixed results have been obtained by researchers examining the degree to which these policies, which are intended to reflect potential economic costs, have achieved their intent in practice. In terms of enforcement (as opposed to the setting of standards), Deily and Gray[1] found that EPA enforcement activities (inspections) in the steel industry were less likely to be directed at plants that were major employers in a community and whose financial conditions indicated a high probability of closure.

Magat *et al*[2] studied the implications of the "Best Practicable Technology (BPT)" process used by the EPA under the Federal Water Pollution Control Act Amendments of 1972. They found that the greater were the predicted impacts of regulations on unemployment *as estimated by the EPA* for an industry, the less-stringent were the water quality standards for organic wastes and suspended solids. They found no impacts of EPA's predictions for plant closures or price increases on regulatory stringency, although the strong collinearity between the plant closure and unemployment estimates made it difficult to separate out their effects on regulations.

Surprisingly, they also found that industries with high pre-regulation rates of return on equity faced less stringent regulations, when one would have expected that such industries would be better positioned to afford the costs associated with environmental protection. Magat *et al* attributed this result to the greater political resistance that could be funded from higher profits, but this explanation would be more applicable to high *total* profits rather than a high profit *rate*.

Overall, it is clear that at least in intent for regulatory design and in practice for enforcement, economic considerations of the type inherent in "achievability" analyses have tended to result in weaker abatement in economically and financially troubled industries. Thus, if mergers alter the economic and financial profile of Ontario industries, they could in turn affect the design and enforcement of environmental regulations.

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[1]Deily, Mary E. and Wayne B. Gray. "Enforcement of Pollution Regulations in a Declining Industry". (Federal Reserve Bank of Cleveland Working Paper; 1989)

[2]Magat, Wesley A., Alan Krupnick and Winston Harrington, *Rules in the Making: A Statistical Analysis of Regulatory Agency Behaviour*. (Resources for the Future; Washington, D.C.; 1986) This monograph also includes a very informative discussion of how the BPT and BAT approaches have been implemented at the EPA, the types of economic analyses conducted, and the problems faced in these processes.

In previous Chapters, we reviewed the extensive debate surrounding the implications of mergers for business performance. For the purposes of this Chapter, the following findings appear to be the most relevant:

- There is little doubt that the increase in business combinations activity has been responsible for increased leverage, although the effect has been more marked in the U.S. than in Canada, where the LBO market has been less active. Most analysts believe that the overall impact of the heightened leverage will be to increase the risks of financial distress and bankruptcy, particularly during cyclical downturns.

- The evidence on the impact of mergers on economic performance (return on assets and growth) is mixed. The stock market evidence suggests, particularly for Canada, that investors perceive real gains to mergers.

- The previous conglomerate merger wave of the late 1960s and early 1970s appears to have resulted in poor performance for many of the diversified firms created in the process.

- Concentration within industries has been linked to higher profitability, although there is disagreement on whether or not this reflects monopolistic pricing or superior efficiency.

- In Canada, there is considerable evidence that increases in scale in manufacturing could yield production economies, particularly in secondary manufacturing industries, and mergers could be a means of rationalizing production and increasing average scale.

Overall, it appears that a reasonable working hypothesis would be to assume that mergers will tend to improve the underlying returns on assets, either by providing superior management to or synergies with the acquired firm, or by permitting a rationalization of production that enables the achievement of plant-level or multi-plant economies of scale. However, where the business combinations are heavily debt-financed, there is likely to be an increased risk of financial distress, particularly in the short-term, despite the potential improvement in earnings before interest costs.

We understand that the Ontario Ministry of the Environment is still in the process of developing its approach to incorporating economic achievability in setting its new standards for air and water pollution control. In general, our understanding is that while other measures of economic achievability might be examined, it is clear that the perceived risk that environmental standards could lead to bankruptcy for the regulated firm is likely to be an important consideration in determining acheivability.

Our discussions with U.S. regulators and review of the evidence on business combinations suggests that in assessing achievability there may be issues that are

unique to the case of firms that have been aggressive participants in heavily debt-financed M&A activity. Particularly during periods of cyclical weakness and high interest rates, such firms could find themselves in financial distress in terms of their ability to meet interest obligations (as is now evident for a number of U.S. firms that were involved in junk-bond financed takeovers). However, in terms of their underlying income before interest on the operations of their facilities, they might be in no worse position than other firms in the same industries.

This will pose a dilemma for environmental regulations. On the one hand, some leniency in standards or timetables for abatement may be necessary to avoid pushing a firm into bankruptcy.[1] On the other hand, to grant such leniency would be to reward firms for taking on undue leverage, relative to equity financed competitors.

In practice, this problem may be mitigated by the fact that firms with potentially large and uncertain environmental clean-up costs are less likely to be strong takeover candidates. A recent issue of *Mergers and Acquisitions* [2] devoted considerable discussion to the problem of uncertain environmental costs in evaluating takeover candidates. According to an M&A expert quoted in this issue, M&A transactions in environmentally sensitive industries, such as petroleum and chemicals, are already being preceded by a careful assessment of the environmental costs and risks being inherited. Buyers in the market for corporate control may be reluctant to proceed with an acquisition, particularly a highly-leveraged one requiring tight controls over future cash flows, where substantial environmental costs are likely but not known with certainty.

This also suggests that the management of a firm seeking to ward off hostile takeover bids could do so by increased spending on environmental protection, thereby depleting the firm of surplus cash that could be used by the acquirer to finance the takeover. Corporate finance specialists we contacted were doubtful of the relevance of this effect in

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[1]While the use of leveraged buyout financing has been much more prevalent in the U.S. to date, the issue of bankruptcy risks may still be more important for Canadian regulators. U.S. bankruptcy law, through the provisions of Chapter 11, enable a debtor to seek protection from creditors and remain in possession of the assets longer, thereby increasing the chance that a liquidation can be avoided. Thus, the economic costs of bankruptcy in terms of plant shutdowns and job losses may be higher in Canada.

[2]*Mergers and Acquisitions*, "Roundtable: Managing the Environmental Risks in Acquisitions", July/August 1989.

practice, and pointed to the fact that extra dividends or share repurchases could accomplish the same objectives while providing a benefit to shareholders.

However, if the environmental spending was only being announced for the future, it would tend to depress evaluations of future cash flows to acquirers without necessarily depleting current cash reserves. A corporate finance specialist felt that this would in fact create an incentive for managers seeking to avoid hostile takeover bids to make public the future costs of environmental protection efforts, in addition to the public relations benefits of such announcements.

The Ministry may wish to dissuade firms from putting themselves into a position whereby environmental costs cannot be financed. By down-playing the existence of the "economic achievability" constraint on regulatory requirements, the Ministry can encourage firms to include an appropriation for environmental costs in M&A business planning.

This would in turn be facilitated by the development of financial reporting rules requiring the disclosure of environmental liabilities. According to an expert quoted in the *Mergers & Acquisitions* review of this issue, the U.S. Securities and Exchange Commission has tightened requirements to disclose potential environmental costs. Some states have also moved to pass statutes giving financial priority to clean-up costs over other creditors in the event of a bankruptcy.

Finally, in developing an approach to economic impact measurement, the Ministry should consider not only bankruptcy risks, but also the likelihood that the plant would continue to operate under new ownership in the wake of a bankruptcy. Highly leveraged companies can be pushed into bankruptcy as a result of only a modest decline in cash flows from operations. In such cases, the plant might still have a substantial value if sold by creditors as a going concern, or it might remain in operation despite being technically bankrupt under a debt reorganization worked out by the owners with creditors. This is particularly the case for bankrupt U.S.-based companies that are able to avail themselves of the protection provided under Chapter 11.

In the longer-term, if the current merger wave and the associated economic restructuring has the positive impacts anticipated by many economists, Ontario should emerge with an industrial structure that is better able to finance environmental protection costs.

Mergers and Economic Achievability Analysis: A Case Study Example

To illustrate the implications of a typical large merger for economic achievability, we consider an example from a Canadian acquisition in light of the types of criteria used in assessing a firm's ability to finance environmental protection expenditures. The example demonstrates the short-term impacts that a merger could have on financial analyses designed to assess the economic impact of environmental costs, and shows the hazards in the use of some financial indicators for such purposes.

The most formal application of economic and financial analysis to assess the economic feasibility of environmental protection legislation has been conducted in the U.S. by the EPA. The EPA has a number of methods for assessing achievability, which generally revolves around issues of potential plant closures and job losses. These include measuring the impacts of environmental protection costs on selected financial ratios relative to benchmark values, and estimating the impact on the present value of plant's cash flows relative to salvage values.[1]

In this case study example, we consider the impact of a merger on methods that use current financial ratios adjusted for proposed environmental protection requirements. These methods involve assessing the impact of environmental costs on various measures of profitability, solvency and liquidity, with firms falling below minimum target values as a result of a regulatory requirement being more likely to face a shut-down or other significant negative impact.

Using this methodology, the stronger is the pre-regulation position of the company in terms of its financial indicators, the greater will be the room for additional environmental protection expenditures without pushing the firm into a high shut-down risk position.

The recently completed buyout of Texaco Canada by Imperial Oil Limited is a good example of the impact of increased leverage and asset revaluations in the wake of a merger. It is consistent with the types of balance sheet and income statement impacts

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[1]See Apogee Research International, "Background Paper on the Origins and Application of 'Economic Achievability" (Prepared for the Ontario Ministry of the Environment, 1989). The discussion of financial ratios used by the EPA in the remainder of this sector is based on this source.

experienced by other firms operating in Ontario, including Noranda (a partner in a takeover of Falconbridge) and Dofasco (which acquired Algoma).

The data in Table 5.1 below are drawn from the pro-forma financial statements filed in conjunction with the 1988 Annual Report of Imperial Oil. The financial ratios shown compare the pre-merger performance of Imperial and Texaco with Imperial's projections of how the merged firm would have done in the same year. We have used a pro-forma statement, rather than actual data for a merged firm before and after a merger, since the latter will reflect changes in the market environment as well as changes attributable to the merger.

Table 5.1
Impacts of Texaco Takeover on Imperial Oil Financial Ratios 1988

	Return on Assets*	Debt / Assets**	Cash Flow / Assets†	EBIAT / Assets††	EBIAT / Adj. Assets*
Imperial (actual)	5.2%	21.6%	10.0%	6.2%	6.2%
Texaco (actual)	8.1%	37.8%	11.7%	8.3%	8.3%
Pro-forma estimate post-merger	1.9%	47.6%	6.8%	5.9%	7.3%

* Net income after taxes divided by total assets
** (Long term debt + other long term obligations + current liabilities) / total assets
† (Net income after taxes + depreciation and depletion) / total assets
†† Earnings before interest but after taxes / total assets
* Earnings before interest but after taxes / total assets, excluding impact of merger on asset book values
Source: Imperial Oil Limited, Supplement to 1988 Annual Report

The first three indicators given in the table above, namely return on assets (a measure of profitability), the debt to assets ratio and cash flow to total debt (measures of solvency) were those identified by the EPA as most relevant in their review of the metal molding and casting industry.[1]

As the data indicate, in the near term, the financing of the merger will result in a significant erosion in the balance sheet position of the combined firm, with a sharp

[1]See Apogee, op cit. for details.

increase in long-term debt relative to assets. Imperial funded its acquisition with $4.3 billion in debt (bank loans and commercial paper) and only $250 million in equity. On the income statement, this increase in leverage will results in a sizeable increase in interest obligations, and a resulting reduction in the combined net earnings and cash flow.

Although there are real effects in terms of the merged firm's position, the data provided above in part reflect accounting adjustments rather than actual operating changes, a problem that frequently arises in comparing pre- and post-merger performance. In particular, the assets of the firm in the pre-merger situation are recorded at book value, while in the "purchase price" method of accounting used in the pro-forma statements, the Texaco portion of the post-merger assets are re-evaluated based on the actual price paid by Imperial (i.e., they are recorded at market values).[1] This upward revaluation lowers the post-merger figure for return on assets, although in practice Texaco would also have been earning a lower return on assets had they previously been recorded at market values.

Thus, in evaluating returns on assets or cash flows on assets, there is a tendency for firms that have recently been involved in mergers to record lower returns (since they are returns on market values) than would be the case for an identical firm whose assets are recorded as book values. This would tend to result in an overstatement of the potential economic impacts of environmental protection costs if one compared the post-merger returns to industry norms for returns on assets, since these generally reflect returns on book values.

An additional bias on tests of economic achievability would result from the use of financial statements of a subsidiary such as Imperial Oil. It is true that the parent company requires a reasonable rate of return in order to invest in a subsidiary, and thus an analysis of earnings is entirely appropriate using only the subsidiary's financial report. However, the debt to assets indicator (or substitutes, such as interest coverage) for Imperial does not provide a true picture of the degree to which there is unused borrowing capacity, since the parent company (in this case, Exxon) has assets against which it could issue debt

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[1] In other cases, the plant and equipment assets figure would remain at its book value, and an additional goodwill asset would be recorded to represent the excess of the purchase price over the book value. In some mergers, where subsidiaries are consolidated using a share exchange, a "pooling of interest" method is sometimes used to eliminate this goodwill value. In such cases, the merger will not result in the type of re-valuation distortion we discuss below.

to pay for environmental protection costs in Canada, should there still be a sufficient return on Canadian operations.

In the short-term, Imperial and Texaco will face an estimated $10 million in additional operating expenses attributable to the merger, a $518 million increase in interest costs, and a $86 million reduction in investment income. The only offsetting factor for cash flow is a $263 million reduction in taxes. Thus, it is clear that the overall cash flow position of the firm will be tighter in the short-term, leaving less in the way of internal funds that could be used for environmental protection spending.

However, this need not imply that the underlying performance of the assets has been weakened significantly by the merger. The profitability measure on which the EPA has focussed (return on assets) suffers from the problem that it is sensitive to the mix of financing instruments selected by the company. In particular, companies with more debt financing will appear to be weaker than identically performing firms with less leverage, since interest costs are deducted before either returns or cash flows. While a stand-alone firm might well be weakened in terms of its financial flexibility with a higher degree of leverage, this need not be the case for a subsidiary with a large parent company, as we pointed out above. Similarly, in the case of an analysis of a parent company, a highly diversified firm will have a greater debt capacity (due to the reduction in the variability of cash flows that results from diversification) than a single industry firm.

In either of these cases, it may be more appropriate to judge profitability by the overall flow of earnings available to all sources of capital. The final two columns in Table 5.1 show the impact of the Imperial-Texaco merger on earnings before interest but after taxes (EBIAT) as a percentage of assets. The second of these columns further refines this measure by eliminating the write-up of the book value of assets to Imperial's purchase price, a purely accounting phenomenon that as we noted tends to distort the before and after comparison of profitability.

As shown by the data, the rate of earnings for both debt and equity holders falls only marginally as a result of the merger, and due to tax implications is actually higher than Imperial's pre-merger position once the write-up of assets is removed from the calculation. An analysis of the overall cash flows on assets to debt and equity holders (i.e. cash flows before interest but after taxes) would show a similar post-merger improvement relative to Imperial's pre-merger position, due to higher depreciation and depletion allowances and lower taxes. When viewed in this light, it is clear that the primary impact

of the merger has merely been to shift the destination of cash flows from Texaco equity holders to debt holders, while in fact improving the overall after-tax earnings and cash flows of the merged firm that are available to these sources of financing.

Furthermore, in the longer-term, it should be noted that Imperial would not be undertaking this move if it did not anticipate that the operating and financial performance of the combined firm will ultimately be improved by the acquisition. The pro-forma statement indicates that it will take up to three years to integrate fully the operations of the two companies. As the benefits from this process are completed, the CEO of Imperial stated that Imperial expects to be "a stronger-performing organization" with gains for "shareholders, customers, employees and the Canadian economy as a whole".[1] The Director of the Bureau of Competition Policy supported this view, stating that the merger "will mean greater efficiencies, particularly in refining and on the supply side."[2] Presumably, Imperial's expectations would include an improvement in the operating and balance sheet ratios used in the economic achievability analysis for environmental regulatory purposes.

In summary, this case study example points to a number of important conclusions concerning future economic achievability analyses to be undertaken by the Ministry of the Environment:

- In comparing a firm's profitability or cash flow on assets relative to industry norms, the extent to which the firm has been more active in the acquisitions market than other firms should be noted. If so, and if assets were revalued at market values when acquired, it may be necessary to adjust the value of the assets downward, to reflect the typical discount between market to book values prevailing in the broad sector being used for comparison purposes.

- The subsidiary corporation or individual plants, if possible are the appropriate levels for profitability and cash flow analyses aimed at predicting plant closures caused by environmental regulations. However, where subsidiary or plant returns are adequate, the financing capability of the parent company should be considered when judging debt capacity.

- Returns and cash flows on assets tend to be biased against firms with a more leveraged financing mix. Particularly in the cases of subsidiary

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[1] As quoted in Imperial Oil Limited. *1988 Annual Report Supplement.*

[2] As quoted in CCH Canadian Limited, *Ottawa Letter*, Feb. 12, 1990.

corporations, diversified firms, or firms in stable industries (all of which increase the ability of the firm to run with a high debt load without a serious bankruptcy risk), measures of earnings before interest may be more appropriate for judging the profitability of the firm in the wake of regulatory costs.

- Large mergers do tend to put pressure on cash flows in the short-run, particularly where they are heavily debt financed. This may put a strain on the firm's ability to raise additional financing for environmental protection spending. The longer term implications of mergers are likely to be more favourable for environmental spending capacity, particularly where scale economies or other synergies are present.

5.2.2 Combinations, Political Power and the Regulatory Process

Mergers, particularly those that lead to the creation of large conglomerates, have been subject to public criticism on the grounds that the resulting concentration of economic power leads to a corresponding increase in political power. In the case of environmental regulations, this could potentially be reflected in a softening of government regulations or enforcement activities for large politically powerful firms. A contrary hypothesis would rest on the fact that mergers reduce the number of independent political voices in an industry, and thereby weaken the industry's ability to win political favour.

Magat et al[1] found no linkage between the degree of industrial concentration (i.e. the extent to which a high market share is concentrated among a small number of leading firms) and the stringency of various water quality standards. Rather, political influence, in terms of its impact on standards, was found to be strongest for industries with powerful (large-budget) trade associations. In fact, industries with many small firms faced weaker regulations, as we discuss below, in reflection of the concern of regulators over the potential financial burdens that tight standards would entail for small firms.

Once standards have been set for individual industries and firms, environmental performance will be influenced by the degree to which standards are met. Enforcement activities by regulators are an important determinant of the degree to which industries and municipalities are likely to comply with environmental standards.[2]

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[1]Magat, Wesley A., et al, *op cit.*

[2]Gray, *op cit,* confirms this result for health and safety regulations but not for EPA regulations on air and water, with the latter result attributable in part to measurement problems and difficulties in controlling for the fact that industries expected to be in non-compliance are more likely to be targetted for inspections.

A recent study by Gray[1] examined the extent to which U.S. regulatory enforcement activities are affected by the political power of the industry. His hypothesis was that highly concentrated and unionized industries have greater political influence. He therefore expected that such industries would be less subject to inspections for environmental and safety violation, after controlling for the expected influences of plant size and previous violations. Since horizontal mergers tend to increase concentration, his hypothesis would suggest that mergers would result in a decline in enforcement activities.

On balance, Gray's data neither support nor solidly reject his political influence hypothesis. The data for enforcement by the U.S. EPA and OSHA (for occupational safety and health) actually show the reverse tendency with more concentrated and unionized industries actually being subject to greater enforcement efforts. This may reflect the fact that heavy manufacturing industries tend to be more concentrated than light manufacturing, and one would expect heavy industry to attract greater regulatory attention. In fact, an equation that allowed for these inter-industry differences, and used only the changes in inspection activity over time, showed a positive relationship between concentration and air pollution enforcement efforts, although the negative linkage remained in water pollution control. Another factor is that industries with large plants are more likely to be concentrated, and thus the plant size variable (intended to control for the fact that a larger plant is more likely to have major environmental or health and safety costs if in violation of regulations) could be picking up some of the influence of concentration on enforcement.

A second influence of mergers (including non-horizontal mergers) on enforcement could come through the impact of mergers on firm size. Would a firm operating two plants receive more or fewer inspections per plant (i.e. more or less than twice the number of total inspections) relative to a firm with only a single plant?

Here there are two possible and competing hypotheses. Larger firms may have more political power and thereby avoid stringent enforcement activities. On the other hand, a large firm might be more likely to attract the attention of regulators and the general

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Other authors (see Gray for references) have independently confirmed the link between enforcement efforts by OSHA (for occupational health and safety regulations) and subsequent compliance.

[1]Gray, Wayne B., "Enforcement and Compliance: OSHA and EPA Regulation in Manufacturing", (Mimeo, presented at the Winter Meetings of the Econometric Society, 1989)

public if found to be in violation. Gray[1] found a positive linkage between plant size and enforcement activities by the EPA, but it is not clear whether or not the enforcement in larger plants is disproportionate to their size[2], and he did not investigate the impact of overall firm size on inspections. EPA, and Environment Canada officials felt that larger firms, which generally are the major single point sources of environmental contaminants, receive a disproportionate degree of attention from regulators, due to their importance in achieving goals for environmental quality.

5.2.3 Mergers and Firms' Efforts to be in Regulatory Compliance

Business combinations could also potentially have an impact on a firm's willingness to comply with environmental protection regulations, independent of the changes in compliance induced by changes in enforcement. Here there are a number of competing hypotheses that appear to be reasonable.

First, environmental protection spending might be viewed by firms as at least somewhat of a discretionary element of their activities, financed out of cash flows that are available only after meeting basic operating costs, interest and taxes. If so, then the extent to which mergers and acquisitions activities result in changes in earnings after interest and taxes would result in corresponding changes in environmental protection expenditures.

Gray[3] found a positive linkage between profits and the degree of compliance with EPA regulations for air and water quality (as well as for occupational safety and health), although his measure of profits (the price-cost margin) excluded interest costs, which are often increased by M&A activity. Recent research by Hall[4] revealed that firms involved in M&A activity showed a subsequent decline in R&D funding, which she attributed to the discretionary nature of such spending and the pressures placed on cash

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[1]Gray, Wayne, *op cit.*

[2]Ideally, one would want to understand the potential relationship between enforcement and the potential reduction in emissions that would result from compliance. Gray measured plant size by the number of employees per plant, which might not be linearly related to either production or environmental emissions.

[3]Gray, Wayne, *op cit.*

[4]Bronwyn Hall, University of California (Berkeley), personal communication.

flows by takeover financing. One might expect to see a similar finding for environmental protection spending, particularly where enforcement efforts by regulators are lacking.

A second, competing hypothesis would focus on the potential long-run profit improvements that some studies suggest are the result of M&A activity. This might be particularly true for Canada, where mergers are likely to play a role in economic restructuring needed for Canadian firms to compete in a liberalized trading environment. If so, and if environmental compliance is at least in part linked to profitability (by the same mechanism discussed above), then mergers could improve the degree of regulatory compliance in the long run.

Mergers could also affect compliance through the possible relationships between firm sizes and compliance. Larger firms might feel better positioned to defend themselves in legal actions if found to be failing to comply. However, in the present market environment, larger firms that are involved in consumer markets might want to avoid the negative publicity that repeated violations might engender. Multi-plant firms also have more assets at risk if sued for damages arising from environmental hazards at one of their facilities.

In the only relevant study that we have identified on this issue, Viscusi[1] found no linkage between firm sizes (which tend to be increased by M&A activity) and compliance with EPA regulations on water pollution in the pulp and paper industry.

5.2.4 Business Combinations and the Assessment of Economic Impacts

Business combinations generally serve to complicate the task facing a regulator attempting to assess the economic achievability of a particular standard or technology requirement. The case study example shown above illustrated some of the complexities involved in assessing the financial and economic status of a firm that had recently been involved in a merger.

According to EPA officials, the impact assessments conducted to assess the economic costs of environmental protection programmes are generally conducted at the level of the individual facility or plant. We understand that the Ministry of the Environment expects that in setting control orders and standards for individual plants, it may be

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[1] Viscusi, W. Kip, personal communication.

necessary to conduct similar plant-level analyses. In our view, such a disaggregated approach is essential, since a multi-plant firm may have strong overall profits, but would be unwilling to maintain operations at its most marginal plants if they were hit with high environmental protection costs.

Financial reports for a single-plant, non-diversified firm will generally provide a good indication of the financial viability of the plant under various environmental-protection cost scenarios. The task becomes more difficult for multi-plant, diversified or vertically integrated firms, where even internal company data might not provide a clear picture of the economic viability of individual facilities.

This is particularly the case for firms that are linked vertically across various stages of the production chain. Many of the industries that are of major importance in Ontario environmental protection programs, including the energy, forest products and metals sectors, have a significant degree of vertical integration.

In such cases, a firm might be induced to maintain operations at an individual plant that in itself provides poor returns, but which is a necessary part of an overall, profitable production process. In assessing whether or not this is in fact the case, it will be necessary for the Ministry to assess the viability of the firm as a whole in the absence of a particular plant at a given stage of the production process. The likelihood of a plant closure due to environmental protection costs would be reduced in cases where arm's length suppliers are unavailable (which in turn tends to be more likely where the products are customized, non-commodity inputs) and where supplies from other facilities of the same firm are either unavailable or impractical due to transport costs, capacity constraints or other factors.

Whereas in vertically integrated firms there is a risk of overstating economic impacts due to environmental costs, horizontal business combinations, particularly those linking Ontario plants with facilities outside the province, could entail a risk of underestimating the potential for plant closures and employment losses. An individual plant could show a reasonable return on investment, but might still be shut down by a multi-plant firm if excess capacity existed in other facilities, or if out-of-province facilities could be expanded at a cost that was less than the environmental costs being imposed by Ontario.

In theory, the same type of impacts could occur in industries characterized by single plant operations, since facilities of firms outside Ontario could still be potential competitors for the Ontario market, and effectively squeeze out less efficient (or more heavily-regulated) Ontario firms. However, this issue is likely to be most acute where the Ontario and extra-provincial plants are under common ownership, since such linkages improve the flow of information on relative costs, and provide the facilities outside the province with the reputations, brand names, distribution channels and other assets held by the firm in Ontario.

5.3 Business Combinations and Environmental Performance

Business combinations could result in direct impacts on environmental performance by altering the mix and scale of operations at Ontario plants. Combinations that lead to plant closures would reduce the number of point sources for environmental contaminants. This effect would be magnified to the extent that such closures generally involve older, less cost-efficient facilities that were not designed to meet modern environmental standards.

Such shutdowns in the wake of a takeover are quite common in practice. In a recent Ontario example, three weeks after U.S.-based Crown, Cork and Seal acquired Continental Can Canada, it announced the closure of a Toronto area plant, citing its age, inefficiency and high maintenance costs. Output was shifted to three, more modern plants.

There are also economies of scale in many environmental protection activities. Thus, the consolidation of output into one larger plant following a merger may result in a lower total cost for environmental protection than the separate costs associated with controlling effluents at two independent plants. Even where the merged firm continues to operate all of the pre-merger facilities, there may be savings on environmental costs associated with multi-plant economies in engineering designs and research that can be applied to all of the firm's plants.

Reinert and Ratick[1] examined cost data related to flue-gas desulphurization for the presence of economies of scale. Rather than directly examining the scale of the plant, they focused on the extent to which the cost per unit of sulphur removed was lower

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[1]Reinert, Kenneth A. and Samuel Ratick, "A Note on Estimating a Long-run Average Cost Curve for Flue-Gas Desulfurization" *Journal of Environmental Economics and Management*, March 1988.

for firms removing a greater volume. Their results confirm the presence of scale economies in this important element of air pollution abatement. Since larger plants are likely to have greater emissions to be controlled, one would expect that one large plant would have lower flue-gas desulphurization costs that two smaller plants with an equivalent total output.

Magat et al[1] in fact found that industries with numerous small plants or a high percentage of plants which are small tended to face *less* stringent regulations. They argued that this result confirmed their hypothesis that small plants face higher treatment costs than large plants, and that regulators would therefore set less stringent standards in order to avoid serious economic impacts in industries with many small plants.

Similarly, David Evans, in work sponsored by the Small Business Administration,[2] found that spending by firms to complying with environmental regulations in the U.S. rises more than proportionately with firm size (that is, a plant twice the size would tend to face more than twice the cost of compliance) and that single plant firms have lower costs of compliance per plant than multi-plant firms. Since spending would rise less than proportionately with firm sizes if the regulatory requirements were constant (due to economies of scale), Evans concluded that small firms had effectively been given lighter treatment by regulators. Thus, mergers that create larger, multiplant firms would reduce the extent of these exemptions for smaller, single plant firms, and improve overall environmental performance.

Mergers and business combinations may also serve to reduce the number of very old plants in operation in the province, since if such mergers are followed by a consolidation of production, the least productive facilities are usually the ones closed. While we have no direct data to confirm this, our hypothesis is that older plants tend to be poorer in environmental performance, and that substituting output from more economically efficient plants will also tend to involve a shift in output to cleaner facilities.

In the longer term, if mergers are a positive economic force for Ontario, as the evidence appears to suggest, then they will ultimately increase the level economic

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[1]Magat, W. et al, *op cit.*

[2]Evans, David S., The Cost of Complying with Environmental Regulations Across Plant and Firm Sizes in the Manufacturing Industries. (Environmental Law Institute; Washington D.C., 1985)

activity in the province over that which would otherwise take place. This positive effect on economic growth would, in the absence of tight regulations, lead to an increase in environmental contamination. However, as we have also noted, if this growth is the result of an improvement in Ontario industrial competitiveness, the resulting gains in the financial performance of Ontario companies would permit the additional spending required to meet tougher environmental standards.

5.4 Directions for Future Research

The literature review and interviews conducted for this study have pointed to a number of promising opportunities for further research on this issue and related questions. In some cases, these opportunities might be of interest to the Ministry of the Environment for in-house research or commissioned studies. In other cases, the academic or research community interested in environmental and regulatory economics might find the topics to be of interest.

First, in terms of Ontario policy development, it would be useful to develop at least some of the types of data sources available for the United States. These include data by industry and firm characteristics on compliance costs, inspections and other efforts at enforcement, violations with Ministry standards, and actual environmental protection expenditures. In the absence of such data, it is impossible to ascertain the extent to which conclusions reached with U.S. data are relevant for Ontario.

Second, researchers in the U.S. or Canada might find it interesting to explore the impacts of mergers and acquisition activity on subsequent environmental spending. As we noted, one recent U.S. study suggested that financial constraints in acquiring firms limit their discretionary spending on research and development. No similar study has been conducted for environmental protection spending, although the required data appear to be available for the U.S.

Third, close attention will have to be paid to the treatment of multi-plant or diversified enterprises, or firms recently active in the M&A market, in developing an approach to assessing the economic achievability of particular environmental protection standards. We have also noted the extent to which highly leveraged companies, which are frequently those that have been involved in M&A activity, may require a very careful assessment when considering the financial and economic implications of environmental costs.

Fourth, while it is frequently mentioned by regulators in the environmental field, there appears to be little evidence on the direct implications of environmental protection spending on actual plant shutdown decisions, or on relocation moves by multinationals. One possible avenue for research would be to develop a model of international investment behavior for an industry heavily affected by environmental standards, and to test for the explanatory power of variables designed to capture the relative stringency of environmental standards.

APPENDIX 1
THE MERGER EXPERIENCE IN OTHER COUNTRIES

Mergers in the United States

The present merger wave in Canada closely parallels the experience in the United States. This is not merely a coincidence, since some of the largest U.S. mergers also lead to the amalgamation of Canadian subsidiary operations. In addition, many of the causal factors underlying Canadian merger activity are also present in the United States economy and financial markets.

The years since 1984 in the United States have seen the payment of unprecedented prices to acquire companies, a period often referred to as one of "merger mania". Leveraged buyouts using junk bond financing have been one of the driving forces behind the mergers and acquisitions of the 1980s. Transactions of unprecedented size suddenly became possible using the new financing techniques. By the end of 1986 investment banks also began to take ownership positions as part of their role in takeover bids, further increasing the availability of financing. 1987 represented a turning point as unfavourable tax changes were implemented regarding merger and acquisition activity. The new tax laws, in combination with fewer prime takeover candidates, reduced the number of mergers and acquisitions in 1987 by almost 40% over the previous year.

U.S. M&A activity was also quite robust in 1989, based on data from the first 9 months of the year. Announced acquisitions were up 15% over 1988 in terms of value (to $188.1 billion) and there was also a 15% advance in the number of acquisitions (to 1,977) during the first three quarters of 1989 relative to the same period in the preceding year, as recorded by W.T. Grimm & Co.

In international merger and acquisition activity, U.S. firms have been increasing their purchases of foreign firms over the last two years. Countries which attract U.S. buyers include the U.K., Canada, France, West Germany, and Italy. Foreign purchases of U.S. companies are declining slightly after increasing from 1984 through 1988. Most foreign purchases of U.S. firms are made by U.K., Japanese, and Canadian firms.

U.S. Merger & Acquisition Activity 1979-88		
Year	Number of Mergers	Average Value ($000,000)
1979	2,128	41.6
1980	1,889	49.8
1981	2,395	73.4
1982	2,346	57.8
1983	2,533	67.9
1984	2,543	112.8
1985	3,001	136.2
1986	3,336	117.9
1987	2,032	168.4
1988	2,258	212.5
Source: W.T. Grimm & Co.		

Mergers in Japan

Merger and acquisition activity in Japan has been quite stable over the past 15 years (see the table on the next page), showing less of the wave pattern evident in North America and European experience, although the most robust periods have tended to match the merger peaks in the U.S. Hostile takeover bids are restrained by the fact that existing conglomerates have historically controlled many of the largest enterprises. As of 1974, six major enterprise groups (trading houses)[1] and their majority-controlled subsidiaries owned 25% and controlled 31% of the total assets of all Japanese corporations.

[1]Mitsubishi, Mitsui, Marubeni, C. Itoh, Sumitomo, and Nissho-Iwal). This statistic was cited in Marfels, *op cit.*

Mergers and Acquisitions in Japan 1970-85		
Year	# of Mergers*	# of Acquisitions**
1970	1,147	413
1971	1,178	449
1972	1,184	452
1973	1,028	443
1974	995	420
1975	957	429
1976	941	511
1977	1,011	646
1978	898	595
1979	871	611
1980	961	680
1981	1,044	771
1982	1,040	815
1983	1,020	702
1984	1,096	790
1985	1,113	807

*Consolidations of two or more firms
** Transfers of business
Source: Marfels, C. *op cit.*

According to *Japan M&A Reporter*, the Japanese prefer to expand by using internal resources to build new businesses related to their principal line as opposed to using acquisitions. However, recent experience suggests that as Japan becomes more of a major player in the world economy, Japanese managers are being forced to consider mergers and acquisitions as a viable approach to global expansion.

According to *Japan M&A Reporter*, (the most comprehensive source on Japanese mergers, although it provides data only as far back as 1987) international merger and acquisition activity by Japanese firms is increasing substantially in both number and value, particularly with respect to the United States. The table below summarizes the number of international acquisitions.

Japan M&A Reporter concluded that the driving forces behind this trend have been the large pool of capital built up as result of high domestic savings and trade surpluses, the relative cheapness of U.S. assets (in terms of price/earnings ratios), and the trend towards global competition. As a result, Japanese acquisition activity in the U.S. has more than doubled each year since 1985 with $12.7 billion spent in 1988. Japanese merger and acquisition activity in Europe has been much slower than in the U.S.

However, with the prospect of European integration in 1992, many Japanese companies are undertaking mergers and acquisitions with European companies, since production in any one country will provide secure access to all of the EC. One investment banking firm reports that Japanese inquiries regarding acquisitions of European firms has tripled in 1989 over the previous year.

Merger and takeover activity of Japanese firms by foreign firms has been very low. In the last three years there have been 5, 7, and 4 mergers/acquisitions by U.S. firms in 1987, 1988, and the first 10 months of 1989 respectively. Similarly, European firms have merged with or acquired 3, 1, and 2 Japanese firms in 1987, 1988, and the first 10 months of 1989. This reflects the lack of good quality companies for sale and the fact that publicly-traded firms' shares are selling at very high P/E multiples, making them expensive to acquire.

Japanese Foreign M&A activity

Year	American Co.s	European Co.s	All foreign Activity
1984	n/a	n/a	44
1987	72	n/a	228
1988	105	39**	277
1989*	90	20	n/a

* Data for Jan. to Oct. of 1989 only.
** Data for first 7 months of 1988 only
Source: Japan M&A Reporter

Mergers in the U.K.

Total merger & acquisition activity has been increasing consistently in the U.K. since 1984, setting new records each year. According to *Acquisitions Monthly*, the number of mergers & acquisitions involving public companies has increased by 42% from 1985 while the number of private company deals has increased by 102%. The value of the public companies acquired has also increased sharply. As shown in the table on page 74, in 1985 public companies were being acquired for an average value of £57.64 million while in 1988 the average value was £120.73 million, a 110% increase. In contrast, the change in the average value of private merger & acquisitions was only 10%.

The increase in merger & acquisition activity in the last five years can be attributed to four factors, according to *Acquisitions Monthly*. First, the relaxation of government regulations and the resulting expansion of the financial sector (an event nicknamed the "Big Bang") increased the ability of the system to finance large takeovers. Second, a consistently rising market has provided a source of financing though new share issues. Third, attitudes held by shareholders and analysts towards divestment have changed. In the period 1984 to 1988 managers became progressively freer to divest unwanted aspects of their businesses. This new freedom has also created "asset strippers", people who buy companies and then sell various divisions separately. Finally, the increased public interest and praise for entrepreneurship has encouraged management buyouts of companies. Management buyout teams have found it increasingly easier to obtain financing on the basis of their past operating experience in spite of a general tightening of credit conditions.

International merger and acquisition activity has also been increasing significantly in the last four years, with U.K. firms being both the target of foreign buyers and acquirers of foreign companies, based on data from *Acquisitions Monthly*. U.K. acquisitions of U.S. firms have increased each year from 147 in 1985 to 385 in 1988 The average value of these acquisitions increased from $35.4 million to $106.2 million in 1987, but declined to $82 million in 1988.

In addition, U.K. acquisitions of firms in continental Europe have jumped in the last two years with 134 and 252 acquisitions in 1987 and 1988, respectively. Continental European firms have also been increasing the number of their takeovers of U.K. firms from 45 in 1987 to 102 in 1988, with the average purchase price rising from £36.7 million to £50.0 million.

ACQUISITIONS AND DIVESTMENTS IN THE U.K.
(Values in Millions of £)

YEAR	Acquisitions						Divestments			Totals		
	Public Co..s			Private Co.s								
	#	Value	Ave. Value	#	Value	Ave. Value	#	Value	Ave. Value	#	Value	Ave. Value
1984	89	4439	49.88							507	5240	10.34
1985	111	6398	57.64	730	2625	3.6				841	9023	10.73
1986	184	16550	89.95	575	2401	4.18	564	6182	10.96	1323	25133	19
1987	197	13895	70.53	1272	6593	5.18	468	7210	15.41	1937	27698	14.3
1988	158	19076	120.73	1475	5293	3.59	608	13254	21.8	2241	37623	16.79

Source: *Acquisitions Monthly*

APPENDIX 2
TAX RULES AFFECTING MERGER DECISIONS

The following tax rules have implications for firm's decisions to merge with or acquire other companies:

- *rules for loss transfers*, that historically promoted mergers designed to take full and immediate advantage of unused tax credits and deductions held by a firm that had already reduced its own taxes to zero. The acquired firm would otherwise have to carry forward the tax losses for application against future taxes for up to seven years, or lose them entirely. Recent changes to the Income Tax Act have reduced the opportunities for transferring losses where the acquiring firm is not in a similar line of business and thus this incentive would no longer be a factor in vertical or conglomerate mergers. A new *general anti-avoidance rule* could also have a bearing on tax-induced mergers, by disallowing tax gains from a transaction whose primary purpose was tax avoidance.

- *the absence of full loss credits*, that is, the inability of a firm to pay negative taxes on losses (rather than carry the loss forward for future tax years), which creates an incentive for a firm to diversify, in order to increase the probability of having income from some operations against which to apply losses in other operations;

- *federal sales taxes*, which have historically placed a heavier sales tax burden on manufacturing firms that included marketing and distribution costs in their selling prices relative to firms that had such activities undertaken by an arm's length distributor. This served to create a *disincentive* to vertical integration between a manufacturer and its distributor. The proposed Goods and Services Tax would eliminate this disincentive, by taxing the value added generated at each level of the production and distribution chain.

- *provincial tax allocations*, which may encourage a merger designed to shift the province in which the overall firm is taxed to a province with a lower provincial corporate tax rate;

- the *manufacturing and processing tax credit*, which provides lower tax rates on qualified activities, and which may create an incentive for firms to merge in order to have more of the income taxed at the lower rate;

- *rules for transfer pricing*, which are designed to ensure that firms do not shift profits to other firms under their control that face lower tax rates (by being in a different province, country or industry, for example) by charging artificially low or high prices on goods sold from one firm in a corporate group to a second firm in the group. Since observable arm's length prices are not always available, and the rules are open to varied interpretation, there may be cases where mergers between vertically-related firms could afford opportunities for tax reductions through transfer pricing;

- *taxes on inventory profits,* which place a tax burden on upstream firms upon the sale of their product to an arm's length or associated firm downstream, whether or not the downstream product has been sold, favour the full integration of an upstream supplier and downstream firm into a single corporate unit. By integrating, the firm avoids payment of taxes on profit associated with the production of upstream goods (e.g., auto parts) until the final product (e.g., the car) is sold. Otherwise, the tax would be payable as soon as the parts are sold to the car-maker.

- *preferred share rules,* which had previously granted sizeable incentives for firms in non-taxable positions to issue preferred shares to tax-paying firms to effectively transfer a portion of the former's tax shelter capacity to the latter. Federal tax reform imposed a new tax on corporations paying preferred share dividends on shares issued after June 18, 1987.

- *the tax sheltering advantages of debt* , which arise from the fact that interest paid on debt is deductible to the corporation, and some of the debt holders (RRSPs, pension funds) are untaxed, generates an incentive for a firm to diversify in order to be able to use greater debt in its financing without an excessive risk of bankruptcy. Daley et al (1987)[1] report that the effective tax rate on debt is significantly lower than that on equity. Widely diversified firms are often more leveraged than those in single lines of business, since by operating in several unrelated industries, the probability of bankruptcy for a highly leveraged firm is reduced.[2]

- *the tax deferral for retained earnings,* which defers personal income taxes obligations on shareholders' earnings until such earnings are paid out in dividends. This gives corporations an incentive to defer the personal income tax obligations of their shareholders by retaining earnings and re-investing them. While this gives an equal incentive to invest in new assets or acquire an existing business, some lines of business, (tobacco products and alcoholic beverages being frequently cited examples) may generate strong cash flows, but have limited prospects for new investments since sales are declining or growing slowly. Caves et al[3] demonstrated that Canadian firms diversifying out of their base market were often in markets that could be characterized by good profitability but poor growth. When diversifying out of its base market, a firm will frequently find that acquisition of an existing business is preferable to attempting to establish a new subsidiary in an unfamiliar market.

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[1]Daley, M.J. et al. "The Taxation of Income from Capital in Canada: An International Comparison". *Canadian Tax Journal.* 35: 88-117 (1987)

[2]However, Caves et al (1977) found no link between leverage and diversification based on data over the 1961-74 period, and also found that for firms of similar sizes, diversified firms' earnings were no less variable than those of non-diversified firms.

[3]Caves, R.E. et al, *Op cit.*

APPENDIX 3
FEDERAL AND PROVINCIAL REGULATIONS AFFECTING MERGERS AND ACQUISITIONS IN CANADA

Federal Regulations[1]

The Competition Act

At the federal level, the major regulatory barrier to business combinations is the Competition Act, the enforcement of which comes under the purview of the Director of Investigation and Research in the Department of Consumer and Corporate Affairs. This Act, passed by Parliament in 1986, replaced the Combines Investigation Act, which had been widely regarded as ineffective in protecting competition in Canadian markets.

The new legislation is already having a significant impact on merger plans. In its first judgement, the newly-created Competition Tribunal signalled its intention to be tough on intra-industry mergers, by blocking the sale of Palm Dairies to four western dairy co-ops. Our experience behind the scenes suggests that some mergers that might otherwise have been launched are killed because the firm anticipates problems obtaining regulatory approval. Of the first 300 mergers actually reviewed under the Act, nine were restructured and seven were rejected. This new regulatory environment must be contrasted with the fact that only one merger was formally prevented in the 75 year history of the Combines Investigation Act.

Mergers are covered in Sections 63-75 of the Competition Act, which apply to all forms of business combinations. The merger provisions of the Act permit the Competition Tribunal to block or dissolve combinations (including mergers, acquisitions or joint ventures) that are deemed to be likely to result in the substantial lessening of competition in a market.

In practice, this has meant that mergers between parties selling competing products, in markets where sales are or could become concentrated in a small number of firms, are coming under close scrutiny. Much of the work of the Competition Bureau appears to be taking place behind the scenes in negotiations with firms seeking advance rulings on merger plans. The Director of Investigation and Research can either clear a

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[1]This section is based largely on a review of Canadian M&A regulatory practice that appeared in *Acquisitions Monthly*, April 1989.

merger, or set conditions under which a merger would be approved, which typically entail a requirement that the merged firm divest itself of some of its assets to reduce its market power.

In recognition of the fact that efficiency considerations often require large scale production and distribution, the Act permits a merger that has some negative impacts for competition if it is a necessary step towards achieving significant economic benefits from scale economies. The Act potentially narrows the applicability of this defence by requiring that the acquiring company demonstrate that these gains to could not be achieved through other means. In determining the impact of a merger on competition, the extent to which competition will continue to be supplied by imports or substitute products is considered. A firm that would otherwise fail in the absence of a takeover can also be treated as an exception.

The Investment Canada Act

Foreign takeovers come under the purview of Investment Canada Act, the successor legislation to the Foreign Investment Review Act which had been put in place to control the process of foreign investments in 1974. The Investment Canada Act represented a major policy shift at the time of its introduction, by greatly reducing the range of transactions that would be subject to review, by requiring Ministerial rather than Cabinet approval for those transactions that are reviewed, and by allowing investments as long as they meet the criteria that they are of "net benefit" to Canada, rather than the "significant benefit" test that had prevailed under FIRA. Investment Canada, the agency responsible for administering the Act, also has an additional mandate to promote foreign direct investment in Canada.

Transactions are reviewed under the Act when a *Canadian-owned* business with assets in excess of $5 million is acquired. In addition, reviews are conducted for international transactions involving the purchase of control of a *foreign-owned* business with over $50 million in worldwide assets where Canadian subsidiaries account for at more than half of the value. Other transactions that affect Canadian cultural identity or heritage may also be reviewed.

In practice, the Investment Canada Act has not proved to be a significant barrier to foreign acquisitions of Canadian businesses. According to *Acquisitions*

Monthly[1], about 15% of transactions had been blocked by FIRA, and others were discouraged from being launched due to the prospects for a regulatory delay or refusal. No transactions prior to April 1989 had received an outright rejection under the Investment Canada Act, although some firms had been forced to alter the terms of a deal or make certain performance pledges for Canadian operations in the future.

Canada-U.S. Free Trade Agreement

The Canada-U.S. Free Trade Agreement (FTA) supercedes some of the Investment Canada Act with respect to reviews of acquisitions of companies in Canada by U.S.-based corporations. Under the FTA, by 1992 Canada will no longer review U.S. acquisitions of Canadian firms with less than $150 million in assets. This will leave the vast majority of potential acquisitions out of the review process, although the largest Canadian firms, which account for about 75% of non-financial assets, will still be subject to review in the event of a U.S. acquisition bid. Foreign-owned Canadian firms bought by a U.S. company will also be exempted from review under the FTA. Exceptions remain in the case of the primary energy sector, cultural industries, and communications.

The FTA also bars the use of performance requirements relating to exports or domestic content as a condition for approval of a U.S. takeover in Canada, and prohibits such measures for takeovers from other countries where the performance requirement could have a significant impact on Canada-U.S. trade.

The FTA, and the increasing international competition it will bring, will have a bearing on the impact of the Competition Act. Since import competition can be an effective force in eliminating monopoly power, Canadian firms in industries with only a small number of domestic players could be allowed to merge despite their high share of domestic production. We therefore expect that the impediment posed by the Competition Act will be reduced over time, as tariffs and other trade barriers are removed under the FTA.

The FTA will also have far more sweeping implications for business combinations in Canada, due to its influence on the overall economic environment. We discuss these factors in Section 3.7.1.

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[1] *Acquisitions Monthly*, April 1989.

Takeover Defense Laws

National Policy 38 sets out a number of restrictions on the use of takeover defense tactics by the directors and management of target companies. Restraining such tactics acts to encourage hostile takeover bids, by removing the impediments that an entrenched management might seek to put in place during a takeover bid.

National Policy 38 severely limits the use of aggressive defensive tactics once the bid has been launched. However, a number of widely-held firms have recently sought shareholder approval for so-called "poison-pill" defense measures in advance of any offer. Shareholders may in some cases benefit from such measures, since they can have the effect of increasing the negotiating power of a target firm's directors with a potential acquirer and thereby raise the value of a bid for the company. In other cases, however, poison-pills can be against the interests of outside, minority shareholders, by making a takeover bid uneconomical and thereby granting undue protection to the existing management.

Influence of Other Federal Government Policies

Other federal measures that form Canada's industrial policy are less directed at the merger and acquisition process, but can have a bearing on the extent of such activity. Many of the formerly Crown-owned corporations that have been privatized in recent years, including de Havilland, Canadair, CN Hotels, and Teleglobe, have been taken over and merged with the operations of existing corporate entities. Other firms that have remained under crown ownership, particularly Petro-Canada, have been significant players in the mergers and acquisitions market in Canada.

Deregulation, by increasing the operation of competitive forces in an industry, is another force that acts to promote economic rationalization in industries that might previously have been characterized by stability in their structures. The airline industry in both Canada and the United States has seen a host of mergers in the wake of deregulation, with the process in both countries ultimately resulting in an increase in concentration that could constrain price competition in the future. In both countries, moves to deregulate the financial services sector have enabled firms to expand the scope of their activities. Such expansions are often launched through mergers, since an acquisition is often the quickest way to enter a new market.

Provincial Regulations

Securities market regulations come under the responsibility of the provinces in Canada, and these are the most important mechanisms by which provincial governments influence the process of business combinations.

Securities laws can have an important bearing on the costs of acquiring public companies. For example, the extent to which minority shareholders are protected in the takeover process will affect firms attempting to gain control without acquiring all of the shares in a company, and will also affect shareholders' decisions on whether or not to tender their shares in a particular offer. While designed to ensure fairness for shareholders in the takeover process, securities laws serve to increase the price of public acquisitions, by denying an acquirer the strategy of a piecemeal, undisclosed move to gain a controlling interest.

In Ontario, with the exception of federally incorporated companies, takeovers are regulated under the Ontario Securities Act (OSA). Federally incorporated companies are governed under the Canada Business Corporations Act (CBCA), which has very similar regulations to those in the OSA.

The OSA requires particular procedures to be followed in the event of a bid for 20% or more of any class of shares of a publicly traded company, whether by an individual acquirer or a group acting in consort.[1] The OSA regulations ensure that all shareholders within the target class of shares are informed about the bid and the nature of any non-cash elements of the offer, and designates a set period of time (at least 21 days, or 10 days in the event of an all-cash bid through a stock exchange) in which to tender. It also guarantees that shareholders receive at least the best price paid by the acquirer in the 90 days preceding the takeover bid. Public disclosure is also required in the event that any individual or group acquirers more than a 10% interest. Special rules also apply in the event of a takeover bid by an insider, which require the presentation of an independent valuation of the target's shares to shareholders.

Recently, the stock exchanges in Canada, including the TSE, have taken steps to eliminate the issue of non-voting shares that had previously led to discrimination in

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[1]Security and Exchange Commission regulations (SEC 13d) play a similar role in forcing disclosure of takeover intentions in the U.S.

tender offers among voting and non-voting shareholders. Such discrimination had essentially enabled some takeovers to proceed at a reduced cost to the acquirer, who could gain control of the target company without a fair offer to non-voting shareholders. The TSE will now bar the issuance of further non-voting shares unless these are allocated in such a way (i.e. proportionately to voting shareholdings) so as to not alter the distribution of votes.

Further moves by the TSE and federal regulators are being made to bar the issuance of shares to parties who are restricted by covenants to voting on the side of the existing management or board of directors, which would otherwise be a potent takeover defence mechanism.

Unlike the U.S., takeover financing must be in place in Canada before a takeover bid can be launched, a requirement that has made it more difficult to organize leveraged buy-outs in Canada for large companies.

Both the CBCA and the OSA, as well as similar rules in other countries, allow for acquirers to "takeout" or "squeeze-out" minority shareholders in the wake of a non-fully subscribed tender offer when the takeover has largely been completed. These rules in essence enable the successful acquirer[1] to force the remaining minority shareholders to tender their shares at the price offered under the takeover bid.

These rules help to reduce the "free-rider" problem that would otherwise prevent takeovers designed to improve the value of the target company from taking place[2]. A shareholder that anticipated economic gains arising from synergies with the acquirer, improved management, or other factors would always have an incentive to not tender his shares if the bid was for less than the value of the target firm after these improvements are made. By enabling the acquirer to remove these minority interests after a takeover, the rules enable the acquirer to reap the gains from subsequent improvements in the operation of the acquired company, rather than sharing them with minority interests.

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[1]A squeeze can be executed if 90% or more of the shares are owned by the acquirer, or if two-thirds are owned by the acquirer *and* the majority of minority shareholders approve the squeeze.

[2]The free-rider problem in the takeover process was first highlighted in: Grossman, Sanford J., and Oliver Hart, "Takeover Bids, the Free Rider Problem, and the Theory of the Corporation", *Bell Journal of Economics*, Spring 1980.

As we discussed for federal government policies, provincial government actions in a wide range of economic and industrial policy matters can also have an influence on mergers. For example, supply administration policies in agriculture mean that a takeover of a firm with an existing quota may be the only method of expansion for some firms (e.g. dairies). Provincial moves to deregulate the financial services industry prompted acquisitions in that sector of the economy.

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GLOSSARY

acquirer -the firm making a bid to takeover a second firm.

acquisition - the purchase of the assets of a firm by another firm or investor group. Also known as a *takeover.*

Chapter 11 - a part of U.S. bankruptcy law that permits the management of a bankrupt firm to continue to remain in possession of the firm's assets while a restructuring plan is worked out with creditors.

conglomerate merger - the combination of firms in unrelated industries (i.e., neither a horizontal nor a vertical merger).

corporate concentration - the extent to which sales or assets in all industries are linked under the common ownership of a small number of holding companies or conglomerates.

divestiture - the sale of a company or division by a parent company to another firm or to a group of investors.

economies of scale - a situation where the cost per unit of an activity fall as the scale of activity is increased (i.e., total costs rise less than proportionately with output).

greenmail -a payment authorized by the management of a corporation to buy back the shareholdings of a particular investor or group of investors, typically to avoid a threatened buyout by the investor group.

horizontal merger -the combination of two or more firms in the same industry

industrial concentration -the extent to which sales or assets in a given industry are dominated by a small number of firms.

Junk bond - a debt security issued by a firm with high leverage, promising a higher yield in return for the additional degree of bankruptcy risk. Also known as a *high-yield bond.*

Leveraged Buyout - the acquisition of a company using a very high proportion of debt to finance the acquisition. Such buyouts are often made by previous insiders (management), and are also frequently associated with a move to take a previously publicly traded company private. An LBO need not involve the combining of the assets of two firms, as in the case of a merger.

merger - the combining of the assets of two or more firms.

target firm - a firm whose shares are sought by another firm in a takeover bid.

vertical merger - the combination of a firm in industry A with a second in industry B where the B industry is a supplier to the A industry, or a purchaser of A industry output.